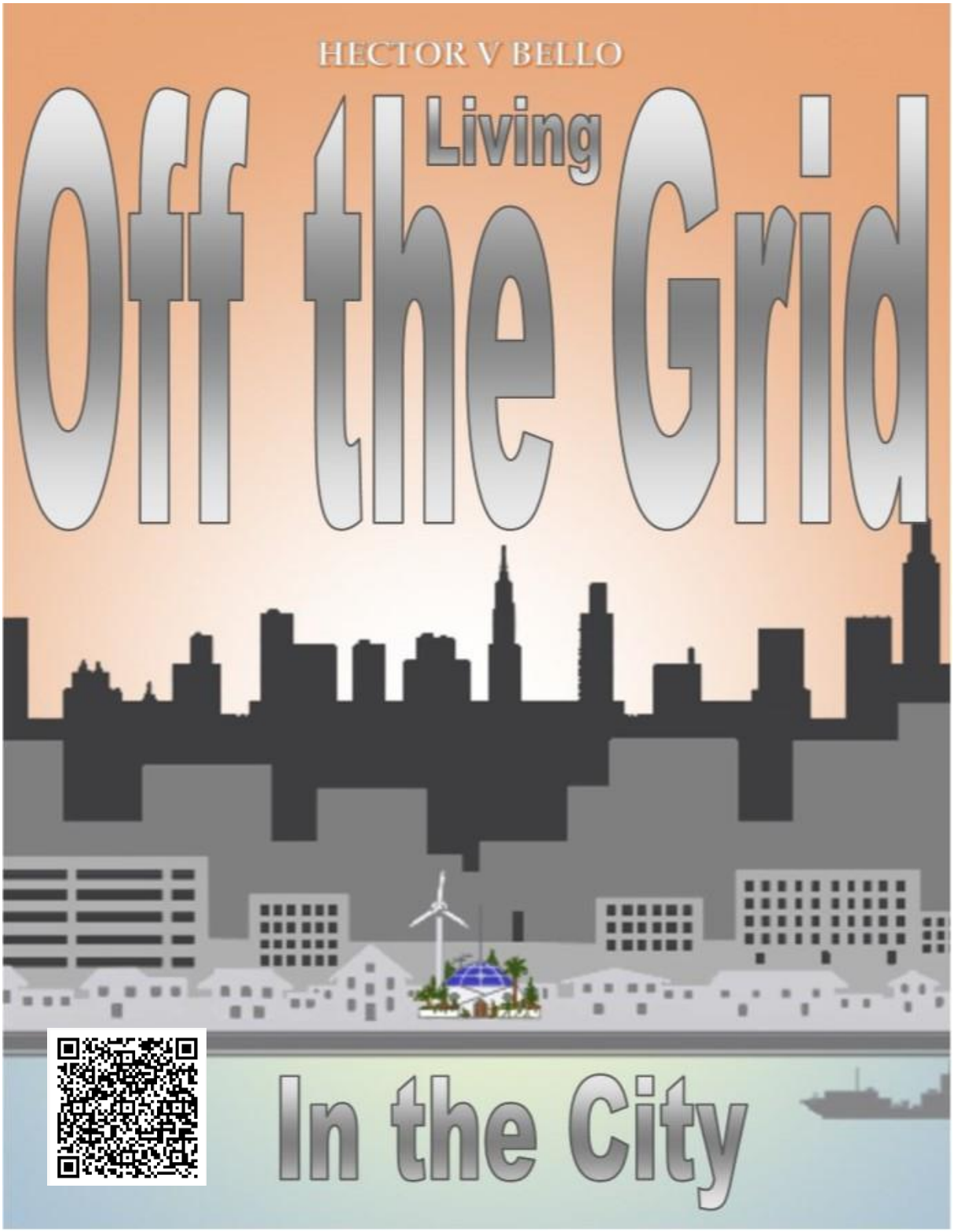
HECTOR V BELLO
Living
Off the Grid
In the City

Hector Vladimir Bello

Living Off the Grid in The City

Book 1

Reasons for Living Off the Grid

Written and edited in 2023, 2024, 2025

Edited and narrated for the

Living Off the Grid in the City Podcast

Hector V Bello © 2023, 2024, 2025

Introduction

Welcome to my latest and most definitive writing and podcast on the vast topic of “sustainable living”. This most exciting, empowering, and liberating podcast is based on my book; “living off the grid in the city”. Here, throughout 2 books of various sections each, I will expand on various topics dealing with this broad subject. Over the years, I believe I have gradually uncovered a great realization. One that I want to share with you. This realization is that we are living within a series of “grids” that are harming us; and we have almost lost our ability to see it, or get out of it. But, through a series of developments in my life; I have begun to detangle from it, partly by living sustainably. Sustainable living has been a subject of intense interest to me for many deeply held beliefs and unique experiences. First, I believe it brings the potential to put us in a course of avoidance and recovery from the dire effects of climate change. Second, it has the potential to correct many wrongs, like the abuse, discrimination and unfairness of many aspects of our society. And, third, it may unlock human technical and social potential; that we have seldom considered.

I became interested in the subject in 2009, during the great US financial recession. At this time, I finally accepted the truth about the cruelty of our monetary system and its individual supporters, corporations, and the government. And, after realizing how most of the commercial and governmental entities that we deal with in our lives; often manipulate our actions as if we were pieces on a board game. I have discovered that “Living off the grid” allows one to become ‘awake’ and refuse to play a game, in which you were placed, without your consent.

Again, I have organized this content in 2 books. In book 1; I introduce important defining terms and statements. There, I define what I mean by terms like grid, middle-people, various alternative or renewable energies, climate-related terms, statistical terms, as well as some assumptions and disclaimers. Then, I move on to the “rationales” for living off the grid. There, many of the important advantages of living off the grid are discussed. Important reasons discussed include: the planetary climate crisis, personal cost savings, social justice, conflict prevention, and disaster preparedness. There, I hope to solidify the reader’s beliefs about the clear and important reasons why living off the grid is “necessary” as an individual undertaking. Because of these important reasons, I believe living sustainably will spread and evolve into a community undertaking and beyond; hopefully sooner than later. Also, I painstakingly express my feelings and views on many of what I perceive to be “abuses of the grid”. I, beyond reasonable recourse, show you how the grid is a system that, although began with noble aims; has largely decayed into a system of abuse, detriment, and damage to society. Excessively-high costs of water, food, and energy; all of which come laden with rash fees and brazenly-high taxes; are among the reasons the grid must go. And, I will introduce to you how the grid was actually ‘pushed’ upon you, often through coercion, and with many “incentives” devised to keep you tied to it. For example, most of us are given little choice but to connect-to and pay-for: water, food, energy, and communications, all at very high cost. Throughout, while exposing the ills of the grid, I too share the advantages of taking the drastic but necessary steps to leave it. I demonstrate how leaving the grid will unlock personal and community potentials that are seldom considered. Also, I dispel doubts and fears of what leaving the grid may do to modern society were it to take hold. And, I engage in a thought experiment; on how an off grid society may be like. Finally, I will briefly discuss many of the barriers to get off the grid. I do this as a preparation for the realities and difficulties you may face as a would-be off-gridder. Here, without qualms, I explore the several “resisting forces” against the off grid lifestyle; like family, friends, neighbors, governments, and society.

In book 2, will dive into the technical aspects of an off-grid and sustainable lifestyle. There, the methods, technologies, and designs; will be introduced and thoroughly discussed, as empowering tools, for the would-be or the current off-gridder. This book will be especially exciting, as you will be exposed to the many ideas and technologies, ancient and cutting-edge; that may enable you to detangle from the grid and break free. So, “living off the grid” is the means to a goal. A goal of greater economic, social, and personal freedom.

So, in this effort; it is my hope to inform, encourage, and demonstrate the off grid lifestyle and its benefits, excitement, and power. The benefits to you as a person, to your community, and frankly; the planet. The excitement, for it to provide self-sustainability, ever-growing efficiency, ballooning personal development, and unprecedented technical advance. And, the power for it to undo the many personal, social, and financial harms brought to us by our current for-profit and against-the-poor economic system.

Section 01

Definitions

What is “the grid”?

The grid, as I generally refer to it, is different from the grid associated with the electrical company. Here, ‘the grid’ is a collection of services, entities, laws, and commitments; that keeps most of us economically tied-down; saddled with debt; generally unhappy; and socially and technically undeveloped. It is a system composed of many entities (institutions, companies, government, and individuals) working independently or together for ‘their’ exclusive benefit; and to your detrimental expense. These entities usually have a ‘cover story’, an apparently ‘noble cause’ for their existence. But, over time, they have become rotten and malignant due to runaway greed, their addiction to power, and spreading corruption. These ‘entities’ include public and private entities, empowered by your government; causing you harm while parasitizing as providers of ‘goods and services’. Public entities may include your water and sewer provider. And, private entities, may include: (1) your electric company; (2) your water and sewer services provider; and (3) your telecommunications (or communications) company.

You have, forcibly and without your consent, been ‘married’ to one or more of these ‘grid’ entities; usually from the moment you become an independent adult to the moment you die. In fact, your ties to these entities, arguably, predate your adulthood; through your parents. You are forced into this ‘marriage’ because, generally, no one asks you if you *want* to get these services; or what rates you would consider fair to pay. And, often, you’re not even given a choice as to what provider you would like to get those services from.

The electric grid, for example, provides you, both; good and ill. It provides the all-important electricity, but it is also the harshest and most-repeat offender for abuse, waste, and mistreatment of customers. Later, I will thoroughly explain how. The water and sewer services provider has become almost as despotic and abusive as the electric company. Its high cost and cruel customer service are often condemned as ‘abusive’. Here, also I will explain how grid entities often hold you ‘economically-hostage’, by taking advantage of your basic needs. And, of course, your ‘friendly’ communications company has largely evolved into a hungry monster, often colluding with others; to create ‘illusions of choice’ while raking in obscene profits.

I believe, these entities have exploited mostly the poor, because of the abusively high percentage of their income they have to give to the grid. But, ultimately, all people suffer from the wrongdoings of the grid. The most egregious aspect of the abuses is that, the grid, exploits people’s basic need to drink, eat, live, and communicate. The players in the grid; your government, and the electric, water, and communications companies; have taken needed services away from your reach and held them up high, and have demanded your resources and subservience in exchange.

What is “living off the grid”?

When you are entered into an agreement, contract, or marriage; forcibly or unknowingly; things will likely *not* be all well. I strongly believe that, when you enter into a relationship, there needs to be a reasonable balance of power for things to remain enjoyable for the parties involved. For example, in old

times, a pauper may be advised not to be close friends with a prince, because the prince would likely abuse his power to the detriment of the pauper. Likewise, a lamb cannot live around a lion, not for long, for obvious reasons. Relationships, such as these, are what we have been 'entered into' by our society; with the electric, water, foods, and communications companies. Here, we are akin to paupers hanging out with princes; lambs lingering among lions.

If you are in an abusive marriage, there are two possible solutions. (Option 1) Change power dynamics in the relationship, in other words, the abuser must give up power. Or, (Option 2), the relationship must end. If the abusive partner will not stop the abuse, nor will she or he agree to give away power, then option (2) is likely the best option. Living off the grid *is* option (2); stopping the abusive relationship with your electric; water and sewer; food, and communications providers. This 'breakup' may be partial or total. Throughout this book, I will thoroughly explain how your relationship with these companies is definitely abusive.

Living off the grid is simply living as free as *you* want to live. Free of economic subjugation, over-taxation, manipulation, and control from entities and individuals. It may be; living without dependence on others that don't share *your* well-being or best-interests. It is, having *more choice*! Living off the grid, maybe, living without unwanted ties and commitments to others, and not living under any requirement to enter into dependence and commitment to others.

In the technical sense; living off the grid is: living, by choice, without connections to an electric power provider; water services provider; communications provider; food provider; or fossil-fuel provider. It is living free of unwanted external providers of goods and services; by commitment or contract, which often occur under the threat of economic and physical punishment. Later, I will explain how these providers attempt to punish you when you deny, or can't pay for, their services. More importantly; living off the grid is being self-sustained, in the goods and services for which you are off the grid.

Simply put, living off the grid is having the right and the freedom to get goods and services only when you need them, want them, and freely inquire for them. As we often lack the control of how much services we receive. Living off the grid can be partial or extensive; with freedom and choice as to how much and how often you use goods and services. And, *if* you choose others to provide goods and services to you. So, living off the grid is about *maintaining control* over 'who' and 'how much'.

Additionally, living off the grid is a powerful way to contribute to planetary *decarbonization*. Decarbonization is the move-away from fossil-fuels to prevent further damage to the environment and prevent its expected dire effects. As I will show, the environment should be the top reason to move off the grid. When you live off the grid, you phase out your use of utility electricity, or any fossil-fuel-driven technologies, simply because they contribute to environmental pollution, and because they are generally more costly.

When living off the grid; you may provide in part or in whole: your own water, food, and electricity, and means of communications. All these goods and services could and should be free of payments, and free of commitments to any company or government. So, I believe living off the grid can bring true freedom and democracy to your home, place of work, and community; through self-sustainability and greater power as an individual.

As an ‘off-gridder’, you can surely remain part of modern society; work, and share with others, including those opting to remain tied to the grid. It is, in fact, a way to more-efficiently advance into the future and improve many aspects of society.

Living off the grid allows you to finally be private, and to be treated respectfully as a law-abiding person until and unless reasonably-suspected of a legitimate wrong-doing. Living off the grid enables you to stay out of the current web of surveillance and control from governments, corporations, social media, and neighbors.

Lastly, it should never be hidden that, in our grid-connected society, living off the grid is difficult. It is often frowned-upon, looked at with contempt, and even treated with hostility. It will require extraordinary determination, high skill, consistent good-decision-making, and lots of work. Yet, the fulfillment will be hard to quantify. Living off the grid is, by no means, a necessarily lone endeavor. It can definitely flourish in groups; perhaps even in larger communities such as towns and cities. Living off the grid requires much study of science and technology; the smart management of resources; and increased knowledge and appreciation of your environment. Living off the grid can encompass as much, or as little, of your life as you want. It may also evolve over time, or remain the same for long periods.

Why “in the city”?

Humans have chosen, for a long time now, to partially live off of a certain grid; the natural Ecosystem. When our ancestors discovered agriculture and farming long ago; we gradually gravitated to leave the life of hunting and gathering, and settle into communities in fertile and resourceful areas. Our dependence on wild nature became increasingly limited, and we began to manipulate and change our environment for our comfort and advantage. In a sense, we brought all that we need and want from nature; to a defined smaller area. In essence, we gathered, built, and maintained smaller more-efficient and productive ecosystems; where we can more-easily get our water, food, and energy. These miniature copies of natural oases became known as villages, towns, and cities. Over time, these places became organized and industrialized, and governed in many ways. Over the millennia, societies have been shaped by advancement, economics, government, and human factors. Many of our abhorrent human traits have corrupted these societies; greed, envy, control. These behaviors have harmed and corrupted many of the systems and institutions that governments have placed for your use in areas we call cities. Living in cities in our current world is the norm. Whether it is a small city, a town, or a large one; a metropolis.

I’ve added “in the city” in “living off the grid”, not necessarily because I advocate *only* being off the grid and *in a city*; but because I know that it is practical to live off the grid and remain a vibrant participant of modern society. This is something I often have to rebuke; you need not live in isolation in the woods to live off the grid. In fact, you are likely to become a leading contributor to creative and innovative methods, ideas, and technologies that can allow you and others to live not only off the grid, but also more efficiently and smartly; including in the middle of a city. For example, living off the electric grid should naturally encourage you to upgrade to more-efficient electronics and appliances; perhaps DC operated ones. And, if you choose to sever your utility water service; rain water should suddenly become an attractive choice as a source of clean fresh water. And, you may want to invest in, or build, a rain harvesting system; even if you live in a high rise apartment building. From solar cookers to solar

water heaters, there are a myriad of technologies, old and new, that may spring to life while living off the grid. Most of which can be deployed while living in a city. You may even contribute to a city-wide 'movement' with your improvements and technologies.

You may live off the grid in a small village, a small town, a mid-sized city, the sprawling suburbs, or even a high-rise metropolis. The point is, you don't have to be isolated, alone, and out of sight; if you choose to live off the grid. It is *not* illegal to live off the grid, and you may do it following all laws in your area. Although some aspects of living off the grid will be frowned-upon, and rejected by neighbors and government officials; you cannot, lawfully, be forced to have or pay-for anything or any services you don't wish to have. However, commercial interests and governments will, and do, try their best to make you believe otherwise.

Yes, there may be more resistance and challenges to engage in an off grid lifestyle in a city. If you rent a residential property in the city, for example, there may be more challenges for you to live off the grid, and may require you to be more creative and inconspicuous. For example, you may want to keep your utility services connected, but not use them. Instead using your own sources of utility services. This may be necessary because private owners may stipulate you to stay connected to utilities, through contracts and agreements, because it may be in their interest that you do, and may be making money from the situation. Later I will explain these specific challenges.

Since most of the world's populations live in cities, this book is primarily focused on living off the grid in a city or town setting; in an individual home or an apartment in a building. But, most ideas and technologies discussed here may be applied in many other smaller community or remote settings.

In summary, living off the grid in the city is completely reasonable, legal, and recommended as it has the potential to change the landscapes of today's cities. Large numbers of off-gridders would reduce many types of pollution in a city; lower resource demands; and improve the quality of life for all city dwellers. However, the current strict social 'requirements' in cities, make them more challenging for pioneer off-gridders. Powerful interests are concentrated in the city. The greed and addiction-to-power of the many controlling city dwellers; will surely have them perceive any change in the current wasteful and harmful paradigm, as a threat to be dealt with.

What living off the grid in the city is not

Living off the grid is not anarchy or living totally outside of government control. I believe that modern society needs an organizing and arbitrating body that can peacefully solve disputes; try and punish criminal behavior; regulate industries and sectors; among countless other necessary duties. Constitutional government is especially necessary as it allows us to agree on 'the rules of the land' to live in reasonable peace and harmony. These laws must be understood, arbitrated, and enforced by a third party; the government. It would not be all 'kum bah yah!' if the government were to disappear, and the law of the jungle and violence would soon begin to determine 'who's in charge'! So, I absolutely believe-in, and advocate-for, an organized and strong democratic and constitutional government.

Living off the grid is not living outside of the monetary system or taxation. I believe the monetary system was the natural and necessary evolution of barter or trading of goods. It is highly convenient, fluid, and enables faster economic transactions. And, the government needs it to remain strong and alive, in part,

through tax contributions. Although, I also believe that money is problematic in many ways. For example, it has too much power as it can buy just about anything, including extremely harmful things and actions. And, I believe it has driven crime immeasurably. But, I believe It would be an unnecessary step backward to try to eradicate the monetary system. Instead, I believe money's power should be diminished, not stripped. There may be a time in human development when money becomes completely digital; replaced by other methods of trade; or even become obsolete. But, those are not the goals of the living off the grid lifestyle, or the topic of this book.

Living off the grid is not living in physical or geographical isolation. In fact, I advocate sharing and expanding the off grid lifestyle. And, it is not being disconnected from *all* sources of goods and services. Living off the grid advocates efficiency, self-sustainability, and freedom from subjugation. It is the decentralization of utilities, goods, and services, and empowering individuals with tools, knowledge and technologies to produce those locally. When I say locally, I mean on-site, in-home, or in a detached and small-scale. But, in this lifestyle, the free interconnection of goods and services is absolutely okay. In fact, interconnection is a hopeful goal of living off the grid. For example, if you produce a larger amount of food or energy than you can use; you are encouraged to freely share the excess or surplus with your closest neighbors. This lifestyle is about cooperation and sharing. But, the initial efforts of off-gridders will appear to be isolated and disconnected because they are the tiny minority of a grid-connected population. And, until many more people are disconnected from the grid and begin their free micro-grids; isolation and separation will be apparent.

What sets this book apart?

During all the off grid discussions in this book; you will notice I maintain focus on the low and middle economic and social classes. This book is written by a poor person, and for the poor people of the world. Nothing against the wealthy, but I believe the 'need' is especially there; for the low-income people to take advantage of the resources that can free them in many ways. Also, I wholeheartedly believe, the 'need' really exists; for poor people to get off the grid. People of 'need' are the ones that have the true necessity to save money; and stop spending large percentages of their income on water, food, communications, and energy. Powerful people largely don't mind paying for these resources; as their incomes are much higher, and the percentage they pay for these resources is relatively tiny. And, many rich folks are positioned to take advantage of the situation enabled by the grid. For instance, they often can hire lower-wage employees for their businesses; have more social, economic, and political power over a larger part of the population; make more money from their investments in the water, food, communications, and energy industries; among other many "benefits". But, they do it on the backs of the poor. Many know it, while many others ignore and deny these moral crimes.

This book is not about a story of a wealthy person who just purchased a country-side cabin and is heroically working hard to be off-the-grid. Nor is it about a "well-to-do" and "attractive" couple going on a cross-country adventure driving their half-million dollar "off-grid" recreational vehicle. Nor is this book about the high-income ex-city-dweller, who had enough of "the grind" and has now moved to the desert; bringing with her all the luxuries of the city, and boasting about living sustainably. No, this book is based on the reality of most of us: poor to lower-middle-class working people, who are practically hostages of a grid-connected society. It is for those with barely the money, time, and resources to break away from a system that applies continuous economic, social, and political pressures on them. This

book's author is not bound by the need for book sales, corporate pressures, or political or social commitments to further any narrative for personal gain. I don't hide the fact that I am, currently, deep into the same situation as most other people: in debt; having to work for a living; and struggling to balance between my desire to help the planet and help my loved-ones and myself. Here, I don't hide that I too struggle to get and remain off the grid; and I lay out the difficulties, road blocks, and advantages of getting off the grid. This content is different because it is bold, uninterested in approval, and unafraid of criticism and attacks. This content is only interested in helping and improving the lives of those that need it; and exposing a system that is out to get you; literally. And, this content provides "down-to-earth" and attainable solutions, acknowledging the economic, and other limitations of its audience.

Here, I attempt to provide the reasoning, inspiration, resolve, limitations, benefits, and step by step guidance on living off the grid. And, I promote living off the grid as a lifelong quest, a lifestyle, and a community. Make no mistake, I exclude no one. I embrace the poor and rich, lowly and elite; of course, considering that all extremes, the very poor and rich, are victims of sorts, of the same artificially-propped system. A system that has pushed inequality to greater and greater heights. Always with the goal of chipping away at the artificial columns of this system, for what I truly believe to be, for the benefit of all.

Who are the "middle-people"?

The middle-people are the agents of the grid. They are the people making a living on the grid, and have deep-rooted interests in keeping the grid the way it is, and have it expand and grow. The middle-people are also the people that live from your basic needs. They have introduced themselves, between you and sources of basic needs, to make money. They are your average utility (water, electric, gas) company employee, your government utility official, or the sales person making money from your communications needs and food supply. Middle-people are also those that make you believe, or impose laws and regulations, on you; so you feel obligated to pay for your basic needs as a person. Your basic needs are to; drink, eat, live comfortably, and communicate. For many generations now, middle-people have infiltrated our economy, our lives, our education system, and our government; with their money and power. They lobby for laws and regulations that sometimes force you to pay for your needs. If you refuse, they made it so you are practically outcast from modern society, or even evicted and arrested.

Middle people can be low-level utility company call takers or fabulously rich and rotten corrupt suit-and-tie-wearing executives that do the bidding of the utilities. Middle-people routinely attempt to thwart or block any attempt for alternative lifestyles and technologies. They suppressed electric vehicle technologies for decades; they are actively suppressing roof-top solar installations; they are actively minimizing any incentives for alternative energy; and are actively encouraging (sometimes forcing) you to use more energy and be less-efficient. These middle-people could be your grandmother or neighbor who vote for politicians that aim to grow the fossil-fuel industry and undermine the progressive changes needed to mitigate the effects of climate change. Middle people are often the 'business types', climate change deniers, and blockers of progress; who don't want things to improve. Some are just ignorant, others are filled with hatred and selfishness, and just want to thwart any helpful efforts made from their so-called enemies. I will further describe these middle people and their misguided machinations throughout this book.

What is solar energy?

Due to the solar energy *revolution* that the world has experienced over the past 20 years, the term "solar energy" has changed meaning for most of us. Before the revolution; solar energy was commonly thought as the energy harnessed by plants from the sunlight. Now, it is accepted as the energy we harness from the sun using solar panels. *Photovoltaics* encompass all about solar energy, which work with the light (radiation) from the sun by using its *photons*. Solar panels are constructed based on an old (1839) principle, the photoelectric effect [*]; where it was found that small objects could be electro-statically moved by some materials that were exposed to sunlight. Fast-forward to today and we have the silicon based solar modules that utilize modern composite materials and ingenious techniques to generate direct (electrical) current (DC)[*]. Thin silver conductors are intertwined (above and below) wafers of different types of silicone. When exposed to sunlight, this arrangement causes a voltage difference on the two sides of the wafers, and as a result generates electrical current. Many solar cells, collected in a *solar module*, can harness and add many currents and send it to its terminal connectors as DC. In a photovoltaic system, other components like combiners, inverters, charge controllers, and batteries; are used to generate usable electrical flow ranging from 12 volts (V) DC, to many AC voltages like 110V and 220V.

Modern solar panel technology was developed by scientists in the Bell Laboratory in the 1950s using a design from a 1939 design by Russel Ohl [*][*]. In the 1970s, space agencies like NASA and Roscosmos, adopted silicon based solar panels when it became critical to power spacecraft and satellites. Since photovoltaic was a much safer and lighter option than nuclear reactors. Through the 1970s, 80s, 90s, and early 2000s, solar energy was largely limited to institutional and government projects. And, panel efficiency remained limited. It wasn't until after 2008 that solar panels started to become powerful and affordable-enough for a wider variety of applications. And, as the US government invested heavily in solar technology after the passing of the American Recovery and Reinvestment Act of 2009; photovoltaic saw a rapid increase in development and use through today.

In this book, I will focus on solar for energy production because I, as many more, have found that solar energy is the simplest, most available, and most affordable type of alternative energy technology. Especially when compared to wind and geothermal.

What is wind energy?

Many parts of the world, including out at sea, enjoy steady and strong winds throughout the year. Wind energy is the harnessing of the wind to generate mechanical work and electrical current. Windmills were used for a few centuries in ancient times by several civilizations [*]. And, after the invention of the electrical generator, wind turbines have been used for electricity production for over 100 years [*]. Wind energy, today, is accepted to be the harnessing of the wind using wind turbines to generate usable electrical current. Wind turbines can produce DC current, or AC current; depending on the type of generator it has. Turbines work based on the Faraday generator principle, where mechanical (or kinetic) energy is transformed into electrical charge using electro-magnetism. Simply put, a set of airfoils (wings) are attached to a shaft that turns a generator as they are turned by the force of the wind. The generator

then produces the electrical current, using electromagnets, which is then channeled by wires to the load or battery. Although wind turbines can be more difficult and expensive to purchase and set up, they offer a viable electrical production alternative in many areas of the world. Many models are small enough to install in residences, boats, and other recreational vehicles. Wind energy in the US, and throughout the world, has grown significantly. A staggering 2% of the world's energy comes from wind [*].

What is geothermal energy?

Many parts of the world, especially those near seismic-activity or tectonic plate junctions, can use Geo-thermal energy [*]. It is complex, expensive, and largely accessed by commercial and industrial facilities. However, many areas of the US and the world, can have geothermal or ground-source heat pumps installed on residential applications [*]. Basically, a residential geothermal system taps into the heat produced in the earth's crust to heat up spaces and water on the surface. "Holes" are bored from 15-122 m deep to channel the ground heat to the surface; to installed heat exchanges. At least 2 holes are needed, an 'in' and an 'out'. Equipment must be installed at the *location of service* above ground, like the heat pump [*] and other equipment. Geothermal energy can be used for both heating and cooling of air and water. Industrial-scale geothermal energy taps into sources of very hot water kilometers underground. It is a source of energy used and highly-developed in countries like China, the United States, Turkey, Germany, France, and Japan. Iceland and the Philippines lead the world in their percentage of national energy harnessed from geothermal energy. [*].

What is climate change?

The topic of climate change is vast and multi-faceted. But simply put, climate change is the trend of rising earth's sea and air temperatures as recorded from millions of years, especially focusing on the trend since the mid 1850's; the onset of the industrial revolution. It is global warming; a climatic trend of increasing temperatures that produces more severe weather patterns and weather events; such as rainfall, droughts, storms, hurricanes, tornadoes, snowstorms, cold spells, and heat waves. Climate change is an established science, with the support of most of the world's scientific authorities. And, it is accepted as being exacerbated (or driven) by human-caused environment-polluting activities [*].

Statistical terms used

From time to time; I will use statistics to support arguments and ideas presented here, or to rebuke counter-arguments. The "average" or "mean" of a "data set" or "group"; is found by simply adding all values in a gathered data set, then dividing them by the total number of individuals in the group. The "mean" is a useful metric; to find what would be the "equal distribution" among all in the group. But keep in mind; the total of values may not, in reality, be distributed equally among the individuals in the group. For example, in a group of 10 there are 9 holding values of $1, and one holds a value of $10. Here the total value is $11, and the "average" is $1.1, although one individual holds a much larger value than most in the group. So, be aware that the average is sometimes "misrepresentative" in a group. The

“median” is the middle-value in a group of values, when the values are ordered from least to greatest. And, it is found by dividing the total value in a group; by 2. For example, in the same group of 10; where 9 have $1 and one has $10; the median is $5.50. The “mode” is the value that occurs “the most” in a group. In the group mentioned above; the mode is found by simply counting each instance of the equal, or similar individual values, then finding which has the most “instances” in the group. Clearly, in this group, $1 has more instances than $10; so, $1 is the mode. Be aware of these different metrics not only when reading this book but also when considering data presented elsewhere, as it may be manipulated to misrepresent facts.

Some common assumptions

This text generally assumes personal qualities, lifestyles, and political and social conditions that may not apply to all readers. These assumptions include: active participation in modern society; living in a community (village, town, or city); living in relative and reasonable freedom; having monetary income from work; being able to purchase goods and real estate property without non-monetary restrictions; not being severely physically or mentally disabled; being able to learn and perform technical work; among others. I solemnly recognize that not all readers will fall into each of the above assumptions and categories. Thus, these and other assumptions are only made for the sake of more-conveniently delivering the content on this text.

Many 'other' assumptions are likely made in this text, some surely unconsciously, others knowingly. And, although the "inclusion" of all readers is of highest importance to me personally, I recognize that it is impractical to include many personal scenarios. I apologize in advance for any failures of inclusion, but, I shall try to remind the reader of these assumptions and my equal appreciation for those that don't fully satisfy those assumptions. Many of the areas of this book assume that the reader is a participant of modern society. I understand this is not the case for all readers. Those living in relative isolation or in remote villages may still benefit from most of the concepts discussed here. Also, I generally assume that the reader has sufficient personal, social, and physical freedom to achieve all or most of the endeavors here offered. I recognize that, unfortunately, many types of freedoms are not present, nor guaranteed, for everyone and in every part of the globe. Predicaments, and other factors, often limit or deny the freedoms that are required to engage in the lifestyle here prescribed. But, the reader may still pursue many of the concepts here described; to whichever extent their circumstances allow. Or, the reader may gain knowledge and ideas for a planned, expected, or possible future. In fact, the knowledge to be gained and expanded-upon, with this text, is a significant action to take and share under limited freedom. With this in mind, apart from in-taking the information, no additional action is expected from any reader who may not be free.

Readers may or may-not be able to produce an income from work. Or, some may not produce sufficient income. I recognize that many throughout the world live with severely limited or no income possibilities. I understand that many can't work due to a variety of reasons; while others can't gain an adequate income for a variety of other factors. For that, I will strive to include some alternatives to using money for the many methods and resources here prescribed for living off the grid. Those "free" alternatives may be few, even within the off grid context, given the widespread use of monetary systems. But, low initial investment, and low maintenance costs, will be central themes in most ideas forwarded here.

Here, it is also often assumed that; people may "purchase" all or most materials, goods, property, or resources needed to live off the grid. I recognize that using money may not be possible, or be limited to some extent, for many people in many areas around the world. There may also be restrictions on "access" for many goods and resources for many reasons; including oppression, war and conflict, racism, sectarianism, nationalism, among other factors. Unfortunately, this is the world many of us live-in.

Again, this text will offer many alternatives to "purchasing". As an argument for this; the earth offers its large supply of raw materials to everyone for free. But, as we know, resources have been taken over and hoarded by countless generations of savage mentalities.

However, even in our time of control; it is often difficult for greedy individuals, institutions, or governments to keep tabs on “all” of their so-called possessions. So, with some knowledge and skill, you may build many things free of charge using raw materials, or existing “finished” products. Many of these useful manufactured products will inevitably be disposed of by other people. Dumpsters and back areas of industries the-world-over are overfilled with usable materials, goods, and technologies. For example; fresh food, and clean water is often disposed-of by supermarkets and restaurants in much of the industrial world. Here, will include those sources of goods, in solidarity with those that have no, or limited-access, to the monetary system.

I recognize that, even here where I live, in the US, access to certain plots of land, and homes in certain neighborhoods are limited, even denied, to many individuals. Discrimination, is often hidden by whispered “recommendations”, and veiled by economic “requirements”, among others. And, these routinely occur in housing, land ownership, and other “property” purchases, right here and today in America.

Many of readers will likely be what many of us consider to be “disabled”. Some people, I clearly recognize, have special physical and mental needs and limitations; some considered severe. And, as many of the ideas and recommendations given here require some physical and mental effort, many readers may feel unrecognized. But, be assured that you are recognized, and that I shall try to include such special circumstances when possible. And, I may, here and there, recommend help and guidance by willing and nearby helpers; to aid to perform and achieve many of the prescriptions here given. Alternative options that consider those with low strength, skill, and physical abilities; will also be given here, as effective content delivery allows.

Some other assumptions, in this text, require moderate-degrees of “technical knowledge”. This knowledge may be unavailable or unreachable to some individuals for a variety of reasons. Perhaps those with limited internet reach or educational resources. But, help by others with current knowledge, or ability to gain such knowledge or resources; is hereby recommended. Knowledge, and some skills, in mechanics, structures, materials, electricity, electronics, and computers; is assumed in many concepts forwarded here. I understand such skills may not have been attained by the reader, at least not yet. In such cases; I recommend seeking such skill, knowledge, or guidance, as soon as possible. This is for the sake of safety for the user and those around, and for the benefit of the reader in her or his endeavor in the off grid lifestyle. I must say that death and injury may result due to explosions, fires, and electrocutions in direct consequence to the lack of knowledge and skill in many of the off grid undertakings here described. I implore you to get the relevant knowledge, skill, and permitting when required; before attempting to use, install, assemble, or otherwise-handle any technology or equipment that may be dangerous in any way.

Some disclaimers

Many of the systems and system components, described here, harness potential energy which may be accidentally or inadvertently released; if they are not well understood. This includes mechanical, electrical, or chemical energy; which may cause harm to people, the environment, and property. With this in mind, you should not attempt any installation or manufacture that requires qualified knowledge, without acquiring such knowledge. Much of this “qualified knowledge” requires testing and licensing by

your municipality (city, state, or nation) to ensure you possess such knowledge. Alternatively, it is highly recommended to have someone with such qualified knowledge or license; perform the work which requires it. Licensing requirements may be stipulated by laws in your area. Licensed work may include: some gas line and equipment work; structural and construction work; and electrical work. Generally speaking, the larger the extent of the work, in size and resource requirements; the more skill and knowledge will be needed; which may require 'qualified', 'professional', or 'licensed' labor.

Having said this, I am an advocate for self-help, which is why part of the title of this book is 'Off the Grid'. And, I believe it possible, for most people, to attain a level of knowledge and skill enough to do most of the work described in this book, which stays at the "residential level". For example, after gaining the necessary knowledge and skill, an endeavor easily achievable in a few months; I believe most people may build a completely safe residential home from the ground up; one which meets all relevant construction "codes" and requirements. Of course, when doing any type of work that is exceedingly difficult; outside qualified, affordable, and honest help is recommended.

As I write this book, I am living in a "house divided". Part of it is on the grid, and part of it is off the grid. As much as I have been ready to give the power company the finger, and tell them to come get their meter; I have not done so yet. As you'll read in a later section, there will be obstacles to getting off the grid, many originating from loved ones you live with. Truth is, I cannot afford to get my current entire house, as it is equipped and wired, off the grid and have it run. And, some in my household do not want to be off the grid, out of fear and concerns for discomfort and legal retribution from "authorities". Some people don't want to get off the grid, unless their house runs the exact way it does when on the grid; with all-house air conditioning, and steaming-hot running water, etc. It is like they don't want to make any concessions. And, this is my current situation.

I currently have solar panels and battery systems running interior lights and office and entertainment equipment, and I do most of my cooking using LP gas. And, I can claim I am about 50% off the grid, as I still reluctantly use water heat, refrigeration, some cooking, and air conditioning from the grid. I have kept a close watch on the energy the electric company "claims" I use. I say "claims"; because I very much doubt this is true. For example, I have been charged for "double" the energy used for the same month under almost identical conditions for several years at this home. And, I have done tests where I purposely use very little electrical energy, yet I get among the highest bills for that month. These and other obvious discrepancies have occurred to me repeatedly with 4 different electrical companies and 4 different municipalities; including electrical services from Florida Power & Light, Flint Energies, Alabama Power, and most recently Georgia Power.

Between 2012 and 2018, I was very close to completely 'pulling the plug'. During this time, I rarely ran my grid-connected air conditioner during the day; I had a liquid propane gas (LPG) cooking range; I used an LPG clothes dryer; and I had a running 3000 watts of solar energy with a battery bank system. Furthermore, I was constantly feeding about 300 watts of energy to the utility grid during the day, using grid-connected solar equipment. These measures should have offset (or replace) the energy I used from the electric company by at least 50%. But, to no avail. The electric company not only continued to charge me about the same amount in each monthly bill; but I noticed a sharp increase in energy charges during the last few years of that time period.

In 2018, I moved to another home. With frustration and lost hope in the system; I did not install solar panels or invested in other electricity saving systems for over 2 years. I figured that even if I took many

energy saving steps, I would not be rewarded for them by the electric company. And, I had years of experience and data to support this feeling. I realized that, in this area, remaining connected to the electrical grid and trying to save energy was a 'zero-sum game'; It just made me spend more money to save little or nothing, at times even pay more. So, I decided the best way to save energy and money was to "abandon" the grid, and stop supporting it and paying for it. I realized the 'grid' really does not care, and does not want you to save energy. The grid only wants you to keep paying, and pay more. And, you pay more by using more energy; that's how they grow and make profits.

After calming my frustration and settling on the fact that I was alone in this fight; I began my unshakable quest to get off the grid and stay off the grid. I began to put my experiences and data together, and ramped-up my research on the practices and tactics of the grid.

At the same time, a relatively new and growing technology was advancing; electric vehicles (EVs). And, the EV industry was rapidly advancing the technology at the heart of the off grid systems; lithium batteries. Also, during this time, solar technologies became more affordable and popular. The pandemic years of 2019-2022 actually presided over a boom in commercial solar energy installation and use [*][*]. I personally worked in a solar farm mega project during 2019 and 2020. Three other large solar projects were built, in my immediate area alone; in middle Georgia after 2020. With more capable, reliable, and affordable solar panels and off grid batteries; I once again was encouraged to pick up where I left off and continue my plans to completely get off the grid.

I learned about the efforts the big electric companies were making to own solar and to, simultaneously, thwart roof-top residential solar installations. This solidified my conviction that the grid was against me and everyone that pays into it. These malicious efforts extended far-beyond the electric grid; I began to learn that the water service, communication services, and food services followed the same abusive trend of thwarting change and ever-raising profits. These companies were largely for-profit entities that were taking advantage of your deep dependence on them. I began to see that this "dependence" was largely "fabricated", and had been "passed-down" to me immediately after I began to work at the age of 16. I call this situation "forcible service", and it has been the case for most people living in modern communities, towns, and cities for at least 3 generations. Again, I now live partially off the electrical grid, and I am taking steps of this long-formulated plan to: (1) get completely off the electric grid; (2) mostly off the water grid, and (3) to a good extent, get off the food and communications grid. Numerically put, 100%, 75%, 50%, and 50%; respectively. I plan, in the near future, to have no electricity bill, no water services bill, make half or less of my current supermarket purchases, and pay very little for communications.

In summary, living in this "house divided", with much guilt I admit that: I still have the following on utility electrical energy: central air conditioning; most of my cooked meals, and heated water. Apart from that all else I do is off the electric grid. This book is my road map to my off the grid goals; some of which I have achieved, others are remaining in my "to-do" list. As you may deduce, many of my off grid goals have developed from sour experiences with the grid; others have come from my wishes of freedom and to help the environment. Over the last 10 years, I have installed, tested, and experimented with several on and off grid alternative technologies. I have worked with solar energy equipment, many types of batteries, wind turbines, heat collectors, solar cookers, and several LPG powered appliances. And, I can tell you that there are enough free and affordable options to be off the grid comfortably, reliably, and safely. The technologies are here and ready to do this. Solar efficiencies are high, and

battery reliability is too. EVs are more affordable, and alternative lifestyles are more popular. Yes, you have to be resourceful and efficient, and let go of the unnecessary wasteful comforts you have been forced to accept as normal. I am living off the grid, I will continue to aggressively expand on it, and so can you and just about anyone else in their own way.

Section 02

Top Reasons for Living off the Grid

Introduction

Since 2015, we have lived through the warmest eight years in recorded history! [*]. Weather-related catastrophes have killed more people and destroyed more property than all the armed conflicts and wars of the last 50 years [*], with over 2 million deaths and over $3.65 Trillion (USD) in losses. Protection of the environment and climate should absolutely be your #1 reason for wanting to live off the grid. It is now beyond doubt that climate change is true, and that its effects are here. Climate change, driven by human-caused emissions of pollutants, has contributed to the earth's land and water temperatures to rise to alarming levels [*]. Simply put, greenhouse gasses (pollutants) absorb some of the heat the earth radiates after it warms with sunlight. More of these gasses trap more heat and have demonstrably caused the average earth's temperatures to rise [*]. This warmer temperature leads to more energetic, longer-lasting, and more-severe weather patterns and events like hurricanes, tornadoes, storms, and droughts. This disruption of the weather also affects the severity and patterns of cold weather events like blizzards, snowfall, and cold fronts. So, climate change is not only global warming, it affects all aspects of the earth's weather.

The polar regions, especially the north pole have experienced the highest warming levels. This does not mean the polar regions are warmer than the tropics. It means the pole temperatures have risen more degrees, on average, than the tropical temperatures have. Here are a few of the floods attributed to climate change in 2022: The extreme flooding of Pakistan in the summer and fall [*]; Flood in Nigeria (June) [*]; South African Flood (April) [*]; Tropical storm Megi in the Philippines (April) [*]; and the Floods in Brazil, February-May [*]. Each of these floods killed hundreds and caused millions to billions of dollars in damages. In the US, between 2020 and 2022 there were 60 weather-event natural disasters that caused 1460 deaths and cost an estimated 443.4 Billion US dollars. Freak weather phenomena, in 2022, like the Southern Tornado Outbreak of March 30, The Southeastern Tornado Outbreak of April 4-6, and the Kentucky and Missouri Flooding in July 26-28; are but a few of the weather disasters attributed to climate change for that year.

Since 1980, the US has experienced 348 natural disasters, claiming over 15,000 lives and costing over 2,512.6 Billion US dollars [*]. Much of the severity of many of these disasters can be attributed, in part, to climate change. To go through each of the evidence, the studies, and the available research on climate change would take volumes, and I believe it to not be necessary here. As an observer of my environmental patterns and the news; I have determined there is something "array" with the climate, and I am sure many more have noticed this too. For example, here in the South East of the US, and for the past decade; winters have been noticeably warmer on average, and the temperatures and conditions have been more erratic and extreme. For example, it is not uncommon to see 75-degree weather for many days in January and February, then to have a "deep freeze" in December and April of the same Winter. And, snowless winters have occurred for almost 10-years in many regions of the Southeast that regularly had yearly snowfall.

The greenhouse effect was studied in the late 1850s [*], and the world's scientific community has recognized the effects of greenhouse gasses on the earth's atmosphere since at least the 1960's, when none other than the Shell and Exxon petroleum corporation's funded reports acknowledging this [*].

One study even projected a dire earth's temperature rise through 1980 [*]. In the 1960's and 1970's, the environmental movement was sparked, in part, by Rachel Carson's book *Silent Spring* (1962), which focused on the negative effects of the use of harmful chemicals in agriculture. Throughout the 1980s, the effects of nuclear war on the world's climate was studied both in the US and the USSR [*], and summarized and televised by the BBC in the documentary *The 8th Day* (1984) [*]. By 1992, the world generally recognized the problems of pollution and global warming, as evidenced in the talks of the Earth Summit, in 1992, in Brazil. There, the teenager Savern Suzuki, delivered a moving speech that represented the revival of the environmental movement into the 1990s. In 2006, Al Gore brought the issue of climate change to the front and center with his influential and popular video presentation, An inconvenient Truth. Gore's well-funded and thorough research was convincing and provocative, and his eloquent delivery gave a much needed boost to the environmental movement. He laid the case for climate change and its effects; by showing dramatic footage, findings, and graphs. I believe he left his audiences with little to reach-for as a rebuttal, especially after the US experienced one of its most active hurricane seasons in history; in 2004-2005.

In 2015, the world came together in France, at the 21st Paris Climate Conference (COP21), to recognize climate change as an "existential threat to humanity". The United Nations (UN) event culminated with the Paris Climate Agreement [*]; a significant milestone for the climate movement. There, it was determined that global temperature rising above 2 degrees Celsius (C) must be avoided, primarily by taking steps to curb carbon emissions. The US, along 199 other nations, was a signatory [*]. However, in 2017, the US was withdrawn from the Paris Agreements by its presidential administration. And, rejection of any climate related efforts ensued for the remainder of that administration. The US rejoined the Paris Agreements under the next administration; in 2021. In 2017, Al Gore revived his climate protection movement, and the public interest, in the now more-evident climate crisis with his film *An Inconvenient Sequel*. Since 2010, the world has been markedly hotter, severe climate events are more common, and the effects of climate change more palpable; all of which were mentioned in Gore's film. By this point, climate change was now more-accepted as a "climate crisis". And, emboldened by the Paris Agreements and the US withdrawal from it in 2017, Gore decided to realign his movement with a more-formal approach. He partly used the film to bring together support for his "Climate Reality Project". This organization was formed and dedicated to training and informing individuals, groups, and leaders about the climate crisis; and to the formulation and application of solutions. In 2018, The United Nations International Panel on Climate Change (IPCC) detailed the evidence and effects of climate change in their now-famous SR15 report [*]. It went further than the Paris Agreement to warn that the world has just over a decade (12 years) to mitigate the more-catastrophic effects of climate change. To be accomplished largely by "decarbonizing" the world's economy.

The experts, on the IPCC board, set a "line in the sand" limit of 1.5 degrees Celsius; as a red-line average for earth's overall (atmospheric and water) temperatures. They warned of dire and severe effects if the earth's temperature is allowed to rise past this 1.5 degree mark; naming droughts, floods, super-storms, wild-life die-offs, and catastrophic loss of polar ice [*]. The US Department of Defense (DOD) officially recognized climate change and its effects as hard realities and as a "crisis" in their 2021 report "Climate Risk Analysis" [*]. The US DOD authors largely focused on the consideration of climate change and its effects for decision making and preparations; naming floods, droughts, and mass human migrations as "threats to America's security". The evidence for the climate crisis is just too overwhelming to argue.

The small amount of references provided here should be plenty to have someone begin to get educated on the vast topic of climate change. Our current climate situation is so demonstrably dire; that it should be our primary reason for getting off the grid. The climate is being affected when you turn on your light switch; by cranking up that gasoline pickup truck; by turning on your home's air conditioner; and when you purchase all that red meat. Our continuous demand on the grid increases the demand for costly energy, food, and water; therefore increasing the demand for livestock, land, and fossil-fuels. All of which, in turn, increase pollution and global warming. Therefore, a reduced demand on the grid; reduces the incentives to keep using and expanding the industries that are affecting the climate.

The next few paragraphs will describe the top contributions delivered when living off the grid. For the protection of the environment: decarbonization, reduced pollution, and the protection of plant and animal life. These are only a start of the long list of benefits and contributions of your off grid efforts. And, these all fall under the protection of the environment; which in turn, are nothing less than investments into our own protection as a viable species, here on earth. After all, it should all begin with "getting our house in order", right?

Decarbonization

The primary way to slow down, stop, and reverse climate change, the experts warn; is to stop artificial and excess greenhouse gasses from entering the earth's atmosphere. This must be done as soon as possible. For this, the burning of fossil-fuels must be stopped. Coal, petroleum, natural gas, and other fossil-fuels must be phased-out. This means factories, vehicles, industries, and households must stop using fossil-fuels and its sources. This goal is, generally accepted, to be viably-reached only gradually; by phasing out fossil-fuels over time.

Many believe that other energy sources must, however, take the place of fossil-fuels; for societies to continue on a comparable rate of development. However, recent trends indicate that this is the wrong approach. To attempt to maintain our same level of high consumption and inefficiency by using renewables is currently impractical, and obviously immoral. Although, renewable sources of energy appear to be poised to replace fossil-fuels, they remain much less powerful and more expensive. And, although an array of efficient methods and technologies have proven to be "up for the challenge" to replace fossil-fuels; I believe there is a better approach. I personally believe that we must engage in a simultaneous "reduction" in our dependance on the conventional fossil-fuel grids, and "increase" in efficiency, and use of renewable energy and technologies. This is on way to describe "decarbonization".

Many of the major studies into climate change agree that "decarbonization" is the strongest mitigating courses of action against the crisis [*]. Rapid or total decarbonization may be very difficult, detrimental, and impractical. That is, in part, because the many available technologies required to harness and use renewable energy require manufacture using fossil-fuels. And, world economies have grown so dependent on fossil-fuels, that entire world populations may be at risk of suffering and hunger. For instance, our food production and transportation networks would be severely disrupted, if we were to suddenly adopt a no-carbon economy. However, a low-carbon economy seems to be within reach, and would be much better than our past and current path. A gradual, but expedited, transition to a low carbon economy is possible. And, it may enable the economies' transitions with minimized impact. Solar, wind, tidal, and geothermal, and battery technologies can continue to grow for energy

production; and gradually but surely replace fossil-fuel sources. Many may discourage decarbonization, or even a low carbon economy, with the argument that “we may never ‘totally’ decarbonize, because renewable technologies too require the fossil-fuel industries”. But, studies have shown this to be false. For example, many bring the example that manufacturing an electric vehicle (EV) requires more carbon pollution than making a gasoline car. This is true, but it is only because it takes into account only the “manufacturing” of the EV. And, because of the carbon intensive process of manufacturing the EV battery. But, that argument is dismissed all together when comparing the “life cycle” of the EV with a gas-operated vehicle; over many years [*].

Other renewable technologies, like solar panels and wind turbines, currently require some carbon pollution to manufacture, but this is more than canceled by the carbon pollution that is “prevented” by their use over many years [*][*].

Reduced pollution

In the spring of 2020, when many of the world’s economies paused as the Coronavirus pandemic started to claim tens of thousands of lives; the world witnessed a rapid decrease in environmental pollution. Preventing and reversing pollution is absolutely a top reason to want to be off the grid. The grid is a polluting monster. The electrical grid is largely run by the burning of fossil-fuels that include coal, natural gas, petroleum, and radioactive materials. And, the “food grid” is almost as polluting, taking immense amounts of land and fuel to operate. The grid, as described here, could not be more toxic, obnoxious, and harmful stuff both for the physical environment and life.

Many thousands of years ago we stumbled upon fire, perhaps when we first saw lightning incinerate a tree; experienced a wildfire; or accidentally sparked a fire while making stone tools. Regardless, It seems we have been in love with fire since. From cooking to just burning stuff, fire is in our survivalist and savage DNA. We just refuse to let it go. Later, we found ways to burn things hotter, longer, and more explosively by burning some types of rock; like coal. Unfortunately, burning and exploding things releases that thing’s chemical and material compounds into the air; there is no way around this. Some of the burnt material, smoke, is visible; others are not visible; but both become airborne and we breathe it in and go into the air. Also, not everything we burn gets consumed. Some material stays behind as charred waste, and some of the stuff we burn turns into gasses that can produce heat. These gasses power our many internal combustion machines. As the industrial revolution kicked off, in the mid 1700s, we have increased the burning of materials and chemicals exponentially. We burn coal, petroleum, natural gas, and nuclear material; to power our ever increasing industrial plants, homes, and vehicles. In this process, we pollute the earth in four ways: air; ground; water; and noise pollution.

Reduced air pollution

Seemingly, air pollution is the most abundant type of pollution. Industrial plants, vehicles, livestock, and commercial and residential buildings; continuously release pollutants into the air. Especially severe air pollutants are: the refining of petroleum, manufacture of chemicals, most generation of electricity, and other industrial processes. Driving your fuel-powered vehicle, up and down the road, releases pollutants into the air. Some households, even, produce pollution; especially in the form of heat, but also as airborne chemicals through the use of Kerosene, natural gas, and liquid propane. [*]. Air pollution was

discovered to cause damage to the ozone layer, a critical part of the atmosphere responsible for blocking harmful radiation. It was caused by propellants like chlorofluorocarbons (CFCs) as discovered in the 1970s. [*]. CFCs were used in many industries' and household refrigerants. In the 1970s, the harmful health and environmental effects of "leaded fuels" was discovered, and it was not until the mid 1980s that it began to be phased out in the US [*]. Again, the engine behind global warming is quite simple; releasing greenhouse gasses, and other pollutants, into the air; warming the air and causing health problems for humans and other animals. Health problems are not limited to respiratory diseases, but they include many types of cancers and nervous system diseases too. For instance, 29% of lung cancers were attributed to air pollution [*]. So, we should want to get off this air polluting grid for the sake of our respiratory health and safety, to ease climate change, and for the sake of all the plants and animals that suffer from the effects of atmospheric pollution.

Reduced ground pollution

The burning of many materials creates solid waste. When you burn a lot of coal or wood, for example, you get mounds of ash, when you burn uranium you get nuclear waste; and so on. In turn, we then have the problem of having to dispose of this waste. When we refine petroleum, or use it to lubricate machinery, there is generally liquid waste that must be disposed-of too. Unfortunately, it is costly and, at times, impractical to build permanent containers for all these waste chemicals and solids. So, often much of this waste ends up dumped and piled up on the ground. Unless very costly measures are taken; the ground will be polluted by these harmful waste materials and chemicals. These eventually harm plant and animal life; they depend on that very ground that we pollute; including ourselves. May I remind you, the ground is not only home for countless species of insects, mammals, and birds; but it harnesses the food and water for those very species. The ground receives rainfall in most areas of the world, and harmful materials and chemicals get soaked into the ground helped by water flow. Waste as liquids can filter into underground water reservoirs or above ground streams, creeks, rivers, ponds, and lakes; all sources of fresh drinking water for plants, animals, and humans. This cycle of ground pollution has been going on "unchecked" in many parts of the world since the mid 1700's! A notable case of dumping polluted waste onto the ground occurred in Ecuador. There, petroleum extraction was conducted by Texaco and Gulf Oil (two American oil corporations). It was widely reported; that these companies' operations in the region dumped contaminated waste water into streams and directly into the ground of the rainforest. The problem was so dire that the busy nearby inhabitants reported these problems, and their possible health effects, which they described to include increased birth defects [*].

We need not to look at the numerous egregious oil spills perpetrated by evil oil giants; to gauge the extent of the ground pollution problem. There is a "gargantuan and slow oil spill" happening world wide every hour of every day! Nearly every fuel-driven vehicle, driven and parked, leaks motor oil. That is currently 98.5% of all vehicles, especially older vehicles [*].This fact is evident in the oil spots you see on nearly every residential and commercial parking space. This used motor oil leaks unto the ground and some gets washed away by rainfall and other water. Some of it goes directly to sources of drinking water, and some settle in lowlands where countless animal and plant species live. It must be acknowledged that, these vulnerable sources of freshwater, are those used to grow crops and the livestock we consume. These polluted water molecules go into the cells of the animals we eat; surely eventually causing health effects on us. The amount of vehicles driven on the road has increased virtually exponentially over the many decades since vehicles were introduced. I have witnessed this problem first hand, and it has been studied widely [*]. A growing problem we face with ground pollution

is the amount of solid waste we are producing and dumping. This waste goes into the ground where we and animals live. The plastics and other materials release chemicals and particles. A percentage of which is surely consumed by livestock, wild game, and fish that we consume.

These are but a few of the problems of pollution. And, these and others should definitely make you want to get off this “polluting grid”. Because, the grid, by its very nature, demands for you to use more and more costly and polluting energy; consume more costly and polluting foods; and buy and use ever more pricy stuff and services. So, for the sake of the health and happiness; for the sake of future generations; and for the sake of the well being of countless animal and plant life; it is time to get off the grid!

Reduced water pollution

Ground pollution leads to water pollution because of the inevitable rainfall and gravity. Furthermore, many industrial plants, all over the world, are located near coastal areas and sources of freshwater. Many have been found to have egregiously dumped harmful waste and chemicals directly into the freshwater sources. [*][*]. Some rivers around the world have had fires on its surface due to flammable water pollution caused by some industries. [*]. Even rain water may be polluted due to pollution of the air. In the city of Los Angeles (California, USA) smog caused by air pollution had been a major problem since the 1940s. [*]. Causing, often, what is known as “acid rain”. And, other cities like Lahore, Pakistan; Hotan, China, and Bhiwadi, India; made the “top 3” on a recent list of “most polluted cities” that rank thousands of cities around the world. Per this list, Chinese cities seem to be especially affected by pollution at this time. [*].

There have been many disastrous oil spills in the ocean that have killed countless sea animal and plant species, and that have affected human food supplies in the sea for decades. Among the largest are: the 1989 Exxon Valdez oil spill, which dumped 11 million gallons of oil onto the ecologically sensitive Alaskan Prince William Sound. [*]. Another, was the Deepwater Horizon oil spill of 2010; where 134 million gallons of crude oil were spilled into the Gulf of Mexico! [*]. There are many other similarly disastrous oil spills: Commerce Bay waste site in Tacoma Washington; Refugio Beach oil spill in California. [*]; Hudson River waste site in New York. [*]; and the list continues. Each of these disasters have eradicated whole ecosystems, and damaged entire regions; not to mention the incalculable loss of animal and plant life. We have partly contributed to these, and more ecological disasters, because we demand oil, and keep buying it even when we have a choice not to. We largely don’t care where the gasoline we buy; comes from, or who sells it. It is clear that our demand for oil will continue to create more incentive for oil companies to continue to pump oil from more sensitive ecosystems: deeper and farther into the sea; closer to our beaches in the desert; and in the forests. They will find oil and refine it wherever it is located. And, the areas where they operate will always run the risk of an uncontrolled oil spill, or experience human interaction that causes ecosystems to suffer. If we continue our demand for oil; oil extraction and transportation will continue to wreak havoc and expand. And, the industries that use oil will remain using oil and continue to pollute our waters. Like the transportation industry. There, oil leaks out of just about every vehicle on the road; contaminating run-off water and ultimately our fresh water sources and our coast lines.

Water pollution also comes from our relentless demand for products. Seemingly, we have been taught to want comfort and convenience over all else. Therefore, we get and buy tons of unnecessary stuff, and end up dumping them in massive amounts. Plastics, chemicals, metals, and other materials end up in

landfills and on the streets; where they cause further pollution to the water. Again, harmful chemicals will filter into the ground and be helped into streams, rivers, and ground water by the rain.

We should want to get off this water polluting grid for the sake of our health, and the health of future generations. And, for the sake of the countless plant and animal life that depend on freshwater sources.

Reduced noise pollution

Not only our bodily health is affected by pollution, but our psychological health as well. Noise pollution is the unceasing noise we hear in all cities. Noise produced by vehicle engines and tires as they zip across the road, or when they accelerate abruptly. Sirens from emergency vehicles; construction; air and heating equipment; aircraft; and countless other machines; generate obnoxious noise. This noise stresses those that live near it, and hear it even during times of rest. Noise exists even inside our homes with windows and doors closed. Air conditioners and fans, and even computers and televisions; generate audible noise that can affect our stress level. If you have experienced a power outage; you can appreciate the difference in noise level as compared when electrical power is on. Likewise, if you have been in the deep woods or barren desert, the lack of human-caused noise can be appreciated. Constant noise can be ignored, but your brain is still aware of all of the noise around you, and this can cause stress. [*]. I believe that your survival instinct makes you alert at hearing noises, especially during times of rest, and in the dark. If noise outside of your home has kept you up at night, you have experienced the effects of noise. Living off the grid shuts down noise. When you are efficient, you cannot have an air conditioner on constantly. So, you shut down that noise significantly. When you are efficient, you cannot have devices connected and “asleep” all day long; so you shut those off and kill their noise too. Off-gridders often opt to live in more natural environments, away from industrial, commercial, and tourist centers; which can help lower noise. And, off-gridders may find ways to cope with noise in their surroundings, through blocking methods, explained in later sections.

Reduced light pollution

If you have been partially and temporarily blinded by flashing lights from an emergency vehicle, that is what light pollution feels like. And, if light from the outside of your home filters into your bedroom and keeps you awake at night; that is how light pollution can affect your health. Night time lighting permits us to move about relatively safely after dark, but it can also affect our circadian rhythm and affect our stress and quality of rest. Light, especially when combined with noise pollution, can affect our quality of sleep and health. [*]. Some light colors and intensity levels may affect our ability to fall asleep, and may shorten our rest time and sleep quality. And, if this happens on a regular basis, our health may deteriorate over long periods and cause more severe ailments.

Modern society has overwhelmed us with artificial light generating devices, and ever more bright, colorful, and dazzling L.E.D. lighting is being used. Wall sized television sets, and large screen phones and tablets are widely used in homes, vehicles, and even during walks, shopping, and work. I’ve called this, “screen hopping”. We jump from our phone screen, to TV, to our home desktops or laptops, then to our work computer screen. Then when in bed, many of us watch more TV and get on social media on our phones, and even read books on back-lit screens of tablets and reader devices like Kindles. It is as if we don’t give our eyes a break.

Also, artificial light has blocked our view of the starry skies. As exterior lighting in our cities gets reflected upward, lights from the sky, stars and planets are largely blocked from entering our eyes. The breathtaking view of a full starry sky is a relaxing and inspiring experience denied to most that live near cities due to light pollution. I recall seeing a full starred sky only in my childhood, during power outages that affected large parts of my home city in the Caribbean in the mid 1980s.

Off-gridders may opt for a more efficient use of light. Perhaps many will recognize the eye and health problems brought about by light pollution; and opt to go with a drastically reduced lighted lifestyle. Perhaps many can choose candle light, low lighting, or no artificial lighting during dark hours. I have experimented with this concept, and have recovered significant health, psychological and spiritual benefits. We have evolved to live without artificial light for millions of years, and it is no coincidence that we are being harmed by it in the recent decades of its increased use.

Protect other life

Humans cut-down, burn-down, clear-out, bulldoze-over, and cement-over; incalculable areas of land, on a daily basis and on a mass scale. In such a world, then, who speaks for the animals?

We are rabidly dedicated to expanding and remaking our environment to our convenience and comfort. Everywhere we go settle; we clear out ancient trees and rare plants, and empty dry ponds and streams to build our homes, businesses, and industries. Not in many places in the world do the people doing these destructive tasks; ask about the animals in the affected areas. Only a few industrially advanced nations have some very circumventable regulations; that attempt to restrict land development due to endangered species. [*][*]. Even fewer nations actually abide by and enforce these regulations.

The destruction of animal habitats is relentless. For instance; in every city and town, of the US and the world, there is some sort of construction project expanding into wild lands. This may be going on in your own town, where you can observe the indiscriminate “no questions asked” clearing of land. And, similar or worse occurrences are happening world wide and on a daily basis. This recognition; gives you a sense of the magnitude and the rate at which we are taking land away from wildlife, for our own selfish comfort.

Destructive construction projects, big and small, are constantly happening throughout the world. Many projects clear out vast areas on land in very short periods; due to the mechanization of construction. Huge machinery is used to uproot large trees, and grind down ancient and rare trees. For example, I was myself part of a construction project that used 2000 acres of land to install a millions of solar panels, in a solar farm. [*]. And, there have been similarly sized projects in this region of the state alone, that occurred in recent years. [*][*][*]. These vast areas were cleared out and extinguished of animal life without too many questions asked. Some persistent species were transplanted from their home to another area; most likely for them to die or harmfully invade other species. That land was bought, a few permits were acquired, and a few people tapped their heels as they walked to the bank. Mean-while; perhaps thousands to tens-of-thousands of animals lost their homes Deer, bears, foxes, coyotes, rabbits, snakes, and perhaps hundreds of other species are quickly disappearing from these areas in Middle Georgia due to land clearing. For example, bears used to be a common sight in the Middle Georgia regions in past decades. And, “Habitat loss, unrestricted hunting, and human intolerance caused a

serious [bear] population decline". [*]. I've lived in this area for over 15 years and have only seen 1 bear in the wild.

Recently, in the Atlanta (Georgia) nearby forest, Weelaunee, there is a planned construction of Atlanta Public Safety Training Center, also called Cop City. [*]. This planned $90+ million facility would clear 85 acres of pristine forest lands and repurpose it for use by various law enforcement agencies and the movie industry. Widespread protest has occurred since the plans were made public. As of this writing, dozens of peaceful protesters have been jailed, and some were unusually charged with domestic terrorism and racketeering charges. [*]. One protester was shot 57 times and killed during a police raid of a protester camp. [*]. Evidence showed this protester was unarmed. This heavy-handed government response to build a frivolous and damaging facility on stolen indigenous land; shows the aggressiveness of corrupt money interests in the city, and the carelessness that exists; for wild and critical ecosystems.

Further south, in Florida, one of the most unique wildlife areas in the world, the Florida Everglades, have been under attack by human land clearing activities for at least 100 years. There, the land has been drained, burned, and razed to make room for human habitation and farming. In the process; eradicating countless numbers and species of animals and plants, and their habitats. [*]. I happened to have lived near this area in my youth, and every year, in the 1990s, new communities were built further west and south into everglades lands. Although these lands are supposedly protected by the state and federal governments, projects have and continue to get approved for major and polluting roads, and polluting communities, shopping malls, and farm land. Not to mention that the original human inhabitants of this area, the Seminoles, are now corralled in a tiny area in the middle of the everglades, the Big Cypress Indian reservation. These people have no choice but to expand outward into the pristine wildlife areas; as their population grows. Many wild areas of the US are in similar or worse peril; too numerous to begin to list here. [*].

In other countries the taking of animal habitat seems to get even more egregious as less restrictions generally exist. Expansion into the forests of central and south America is also occurring at alarming rates. The feverish growth of Asian and African cities can give you a hint into the widespread destruction of animal habitat. The expansion of farm lands to support growing cities generally takes the most land away from wildlife. Currently, over 90% of all mammals that inhabit earth are humans and livestock! [*]. Therefore, the use of land and its expansion; For human use, it is immense and difficult to understand. For example, if you study a satellite image map on your favorite provider; You will notice that many of the green areas are divided into defined plots of land. These are off-limits to wildlife. And, it gives us an idea of the magnitude of the problem.

In "The Sixth Extinction" (by Elizabeth Colbert), it is thoroughly argued how humans are, currently, causing the planet's sixth mass extinction of numerous animal and plant species; due to our destructive activities . Colbert authoritatively argued that by "profoundly reshaping natural habitats; we weaken and fragment animal populations"[*]. Animals cannot just get up and relocate when we decide to build a housing complex on their land. Many animals will attempt to remain or return to that area to live and breed, often coming in contact with humans and vehicles, thus handing many of these "relocated" animals a death sentence.

Another topic, too large to even scratch the surface here, is the problem of deforestation of the Amazon forest in South America. The ongoing disaster, the deforestation of the Amazon, is one that has been going-on for many decades. As a reminder, the Amazon is the largest and most bio diverse rainforest

area of the planet. And, it also happens to be the world's largest above ground carbon store. It is also home to some of the few and precious remaining independent indigenous communities in the world. Yet, we have been ignorant, greedy, and savage enough to destroy (and continue destroying) vast and growing areas of these forests. Per the Rainforest Foundation; a depressing 17% of the Amazon has been lost to human activity and deforestation. In 2019 alone; 2.60 million hectares of forest cover was lost. This is on top of the "already lost" over 90%; of Brazil's Atlantic rainforests. [*].

Among the most egregious crimes to animal and plant life in the world occurred in Australia between the summer of 2019 and early winter of 2020. Many "mega bushfires" burnt uncontrollably, widely put among the results of human-driven climate change. The aftermath of these intense and unprecedented fires left an estimated 24.3 million hectares (94,000 square miles) of land destroyed. And, catastrophically killed over 3 billion terrestrial vertebrates, and countless other smaller animals. Some endangered species are believed to have become extinct; due to these "mega fires". The breadth and scale of the loss of habitat and animal life of this disaster is still hard to understand. The capacity for destruction of other animal species, that we humans have achieved, is stomach-churning and vomit-inducing. We really have been a shame, in the eyes of a creator, as the Shepards of all life here on earth. And, if we were somehow be judged on our deeds, care, and efforts to make the earth a better place; being called "miserable" would be a complement.

The protection of animal and plant life simply is a paramount reason to choose to live off the grid. In doing so, you're effectively turning your back on the machinery that has allowed for so much destruction and pillaging of animals and their home lands. Turning your back on the fossil-fuel industry; which has allowed the pollution of countless hectares of land and water worldwide. Turning your back on the logging industry; that has cleared so much precious wild land. Turning your back on inefficiency, greed, and uncontrolled expansion; which has altered and destroyed so many millions of acres of land unnecessarily, and without much regard to its original inhabitants; indigenous peoples and animals. Living off the grid allows you to think more in sync with nature and animal life, and become more caring and efficient when using natural sources for energy and food. Living sustainably; allows you to not require several thousand-acre farms for your food; or a hundred acre power plant for your electric energy. Therefore, sparing all that land for those other creatures that help make this planet habitable.

So, for the sake of biological diversity, and a healthier overall planetary environment, we must protect other animal life. You see, we depend on other species for countless processes that we don't directly experience. For example, if termites, and similar bugs, did not break down dead trees; forests, as we know them, would simply not exist. And, if we exterminated "all" roaches, so would we be exterminating many types of majestic birds that feed on them. You see, our world is interconnected through biodiversity. And, the reasons ``why biodiversity is important" are too many to exhaust here. [*].

So, "we '' speak for the animals! We, the conscious and compassionate; the humane and aware. We must demand limits to the rampant and reckless human expansion into animal habitats; "we" must protest the obvious abuses and crimes against animals, their habitats and ecosystems. We must educate and popularize the right for the animals to exist, and bring awareness to the importance of biodiversity; to young and old people. We must convince more people of the fact of natural evolution, and present mountains of evidence for it; which will surely sequentially lead to more appreciation of other species.

And, we must extend, as a humanity, the right to life to all other species, and establish strict boundaries on the rare instances where it may be permissible to end such life.

Oppose the fossil-fuel Industry

Occupational hazards

The oil and gas industry is estimated to generate about $5-trillion in global revenue; employing about 10.3 million people in the US. [*][*]. The oil and gas extraction industry directly employs about 450,000 people, in the US. [*]. Gazprom, of Russia, was the largest oil and gas business in the world, in 2021; with 477,600 employees. PetroChina was the second largest; with 432,000 employees. And, Sinopec, from China, was third largest; with 384,000 workers. [*].

Clearly, the fossil-fuel industry is among the largest and most profitable sectors of the world economy. As it has been the economic sector that has provided the vast majority of the energy which power all other sectors; including itself. However, it is also an extremely hazardous industry for the millions of workers exposed to many of its harmful products and environments. The oil and gas extraction industry routinely exposes workers to a wide array of hazards, due to its wide variety of dangerous tasks, equipment, products, and environments. As will be demonstrated here, it is estimated that over 100,000 people have died, since 1970, partly as a consequence of working in the fossil-fuel industry. [*] [*]. And, the amount of workers that have suffered from injuries and illnesses as a consequence of the fossil-fuel industry; currently surpass the several-thousands-per-year. [*]. In the US, between 2013 and 2017; 489 oil and gas industry workers were killed on the job. [*].

Industry top hazards are generally those causes that generate the most injury; many of which are fatal. As many other industries, the oil and gas extraction industry's top hazards are: vehicle collisions; struck by, caught in, and caught between; explosions and fires; falls; and confined spaces. [*]. As the fossil-fuel industry may involve too many different aspects of its components, and vary widely depending on the nation where it takes place; here, will focus on the US extraction industry.

Vehicle collisions

Surprisingly, about 40% of the fatalities, in the oil and gas extraction industry, occurred as result of a highway vehicle incident. [*]. Oil and gas extraction requires a large amount of vehicles to operate; within, and "to-and-from" extraction sites. And, the fact that the industry employs among the largest number of employees, over 10 million in the US, is likely a large contributor to its many deadly vehicle accidents. Again, workers mostly have to travel "to-and-from" work at various distances. So, the use of motorized vehicles involved in this industry; is immense. Although most of the oil and gas extracted products are transported via pipelines, 70%, and ships, 23%; a significant amount is transported via truck and rail, 7%. [*]. And, if refined oil products are considered, trucking accounts for most of the deliveries; at about 1.2 billion tons, 9 billion barrels, in 1 year. [*].

The transportation of a volatile and flammable material is hazardous enough; but it is even more hazardous when you consider the added hazards of the roads and railroad travel. For example, it is known that "trucking" is a dangerous occupation. In 2020, 415,444 large truck accidents occurred in the US, with 4,444 fatalities. Although, only about 0.64% of truck collisions involved hazardous materials.

[*]. And, although these crashes, involving hazardous materials, amount to less than 30 per year; their lethality, and potential for widespread contamination and fires are often of grave consequences. For example, in an accident case study in Kannur, Kerala, India; a tanker-truck carrying liquefied petroleum gas (LPG), hit a divider and overturned. The impact caused a leakage of LPG for about 20 minutes, which formed a large vapor cloud. This vapor cloud ignited and exploded into a fireball of boiling liquid and expanding vapor. This caused many fatalities, 20, and injuries, 15); and burnt many trees and property. [*]. One of the deadliest tanker truck accidents occurred in Ibadan, Nigeria in 2000. There, 100 to 200 people were killed, and casualty estimates remained unreliable, as many retrieved the dead and buried them without official process. In this incident, over 115 vehicles were destroyed in the aftermath. Other deadly tanker truck explosions include: the 2004 Mihăilești România explosion with over 18 deaths; The 1988 Memphis Tennessee (USA) disaster, with 9 deaths; and the 2009 Molo (Kenya) fire, with 113 deaths. [*].

When we consider the many “on-the-job” and “commuting” vehicle accidents; we begin to appreciate the magnitude of this “vehicle collision hazard” that exists within the industry. So, the size and nature of the industry contributes to the many injuries and fatalities; caused on the road. For example, 4 industry workers were driving from their job site when their pickup truck went into a skid and rolled over. The driver was estimated to have been speeding through the curve when control was lost. Two of the vehicle occupants were ejected from the vehicle and killed during the accident. The 2 remaining occupants, who wore seatbelts, survived with only minor injuries. [*]. And, accidents of similar nature likely occur routinely and worldwide within this industry. Roads are often hazardous that lead to extraction sites, especially during inclement weather. And, the amount of working hours that many industry workers experience are long and tiring, often encouraging poor decisions and the omission of safe behavior.

The mining and transport of coal has been growing for more than 150 years. And, although the amount and types of accidents have historically decreased; the industry is exposed to significant hazards of sea and land travel. Like the oil and gas industry; coal mining and transportation is monstrous, and it was estimated to produce about 1,283,000 tonnes per year (2012). [*]. This magnitude of world transport, in any industry, is sure to generate alarming levels of accidents, many of which are fatal. This is especially deadly at sea, where coal ships and barges are sometimes involved in severe accidents. Among the worst accidents include: the 1966 MV Kaitawa sinking, 29 dead; The 1983 Marine Electric sinking, 31 dead; and the 2001 Christopher sinking, 27 dead; among others. [*]. Clearly, the fossil-fuel industry “requires” a rapid production and transportation of massive amounts of high energy and hazardous materials and chemicals. These have, and will surely continue, to be involved in deadly accidents. Top among the reasons for these, in my view, is our ceaseless demand for energy, and the hysterical speed at which we want it delivered. Many of us get annoyed at waiting in line to get fuel for your vehicle. And, a gas station operators' “nightmare” is the prospect of “running out of fuel”. So, these and other constant economic pressures; surely accelerate the speed of the industry. An industry that employs a massive amount of workers, many of which are routinely exposed to the hazards of motorized travel.

I believe this trend of industry accidents is surely to continue unless a drastic change is made in the current paradigm. Getting off the grid, in the way prescribed here; reduces or halts your demand for the products that maintain all of these industry hazards. A reduced world demand for oil, gas, and coal; reduces the number of ships, trains, trucks, and other vehicles moving those products around the world. And, as the world phases out fossil-fuels, the quantity and severity of transportation accidents will surely

wane. Finally, decreased demand should also drive a marked decrease in the health and environmental disasters caused by the transport of fossil-fuel.

Struck by, caught in, and caught between

The fossil-fuel industry, in general, employs a massive amount of workers, many of whom routinely utilize heavy construction-type equipment and machinery, and who are exposed to hazardous materials and environments. Due to these factors, being struck by, caught in, and caught between; are major concerns, and are sources of fatal and serious accidents for the industry. Per the Occupational Safety and Health Administration, OSHA, 3 out of 5 fatalities, in the oil and gas extraction industry, are the result of struck by, caught in, or caught in between hazards. [*].

A recent accident case study discussed an accident where a service rig worker was crushed under a load when the load line broke. The load line was later found to be in poor working condition, rusted and with several broken strands. [*]. Although this type of hazard is not unique to the oil and gas industry; it is nevertheless a typical example of a hazard, and possible type of accidents, that industry workers may experience.

The coal industry has similar safety exposures to the oil and gas industry. I believe, the number and severity of industry accidents are sure to decrease if less demand is put on this dangerous and antiquated industry. For example, if a shift is made to “higher” and “cleaner” technologies and energy sources; I believe a shift to lighter, safer, and more advanced types of machinery is possible for industry workers. Yes, even “green” technologies require the mining of metals and minerals for their manufacture. But, I believe that mining for “green” materials would be much less and safer if there is a rapid increase in efficiency and a vast decrease in the need for energy; the 2 pillars of sustainable living.

Explosions and fires

By the very nature of the oil and gas extraction industry, it exposes many of its workers (and the public) to chemicals, materials and environments that are toxic, flammable and explosive. And, coal, oil and gas extraction operations often occur in remote and hard-to-access areas, where emergency services may be limited within or “to and from” those areas. For example, oil wells may be located at sea, in deserts, in jungles, in politically volatile regions, and even in active war zones. Obviously, these may “both” contribute to accidents, and add challenges to accident response. Furthermore, there is a severe risk of fire and explosion within extraction and refining areas; due to accidental ignition of flammable vapors or gasses. Ignitions may occur in a variety of places; wells, trucks, production equipment, tanks, or shale shakers. And, there is a vast variety of sources and circumstances for ignition; natural and man-made. [*].

Maintaining a relatively safe environment while extracting, storing, and processing such a large amount of hazardous materials and chemicals; is costly beyond belief. I assure you that much of the cost of the fossil-fuel energy that you pay for; comes from the cost to keep these volatile vapors and gasses from igniting. This cost is hard to quantify; as these are worked into the normal operations of the industry. But, the strict safety and fire prevention procedures, training, personnel, equipment, and monitoring; that are required for the relatively safe extraction of fossil-fuel; is extraordinarily expensive. And, it is especially costly when the “human toll” is considered. For example, among the most infamous oil well fires is the 2010 Deepwater Horizon fire. This disaster is perhaps better known for its vast environmental

damage. But there, 10 workers were killed, and the structure was practically completely destroyed by fire. [*]. There are many other cases of oil extraction site fires and explosions, but the list is too long to exhaust here. But, there was a rather deadly case in 1988 called the Piper Alpha fire. There, 165 men were killed by an explosion of the oil platform located in the North Sea off the coast of Scotland. If you're interested, there is a Wikipedia.org article that details the series of events leading to this catastrophic accident. [*].

Although coal is not nearly as volatile as oil and gas vapors; it nevertheless burns fiercely and has caused some severe fires. For example, at the edge of the town of Centralia, Pennsylvania, there are many coal-mine fires, located up to 300 ft. deep. These hellish-looking fires have burned for decades, and are expected to keep burning for hundreds of years into the future. These fires are fed by ground coal deposits, and caused the town to be deserted. [*].

Falls

Coal, oil and gas extraction, carry similar fall risks as some other industries. Great heights, hazardous materials, and a variety of elevated work can be found in this and other industries. Thus, this industry suffers from fall injuries at similar rates and severity. For example, from 2005-2014, 63 workers died in fall events in this industry. Most of whom were “derrickmen” handling pipe from the derrick board, assembling the drilling rig at the well site, or dismantling the drilling rig in preparation for transport. [*].

While many methods and equipment can be employed to prevent these and other types of fall accidents; the #1 option is always to look for ways to “avoid” performing the hazardous task. Living off the grid clearly provides such an option, or at least a potential to vastly decrease the requirement of these tasks. Again, by decreasing the demand on the oil, gas, and coal products; so is the demand decreased for all of its operations. And, by extension, a sharp decrease in fall-related accidents should follow.

Confined spaces

A confined space is an area with limited access and exit. This area may have a single entry and exit point, which may itself be restricted in many ways. Also, the space within may be small, or difficult to navigate. This hazard is abundant in the oil, gas, and coal extraction industries, but especially so for the coal industry. Extraction, by its very nature, requires drilling, boring, caving, and tunneling into the ground.

Very few deposits of fossil-fuel materials are above ground “ready for the picking”. More and more often fossil-fuel deposits are deeper, farther, and harder to reach and extract. Oil platforms are common out at sea, most of which have many confined spaces. Industry workers often have to enter confined spaces such as petroleum and other storage tanks, mud pits, reserve pits, and spaces around a wellhead. [*]. Often there are several deadly hazards to deal with within a confined space. Not the least of which is the limited ability to exit it quickly in the event of an emergency. Additionally, the confined space may have flammable vapors, toxic or unventilated atmospheres, or dangerous machinery. It may also be located in an area prone to flooding, fire, or collapse. For these and other reasons, all confined spaces should be regulated, and access must be classified and restricted to able and qualified personnel. The qualified personnel should be ready to respond to any foreseeable emergency. And, qualified personnel should also remain outside the confined space; ready to respond to any emergency within. So, it suffices to say that; these industry spaces are extremely dangerous to human life. For example, the coal

industry, especially, has had its ample share of confined space accidents through the decades. The worst of these, so far, is one that occurred in China, in 1942. In Benxi, Liaoning, a staggering 1,549 mine workers died in a coal mine collapse. At this time of war, the mine was under control of Japan. Also, in 1975, 372 miners died, along with 130 contractors, in the “Chasnala mining disaster”, in Dhanbad, Jharkhand, India. A particularly close call was that of the 2010 “Copiapo mining accident”. There, 33 miners were trapped 700 meters deep. Thankfully, they were all rescued after 69 days. However, in 2014, the miners of the “Soma mine disaster” were not at all “lucky”. Reported as the worst mining accident in Turkey, this one claimed the lives of 301 people. [*].

The list of mining accidents is too long to exhaust here. But, I truly believe that the simplest and most effective way to reduce coal mining accidents is to “not mine coal”. Of course, the world depends on coal to the point of it causing serious and deadly problems; if the world was to abandon it suddenly. But, phasing out coal, and other fossil-fuels, cannot begin without reducing and aiming to stop its demand. Living sustainably, the way recommended here, aligns with this. Some may consider it extreme, but coal must be phased out. This is recommended by climate and environmental experts the world over. And, what better way to begin this phasing away from oil, gas, and coal; than going off the grid and drastically reducing your need for any of the industry’s products. This is the “definition” of efficiency.

Health hazards of coal extraction

Particularly deadly and numerous hazards, of the coal extraction industry, are the health and ergonomic hazards. The nature of coal mining exposes many of its workers to hazardous environments. Some of which are similar to construction environments, others are unique to the industry. According to OSHA, mining activities that may bring differing levels of bodily injury include: “lifting heavy items, bending, reaching overhead, pushing and pulling heavy loads, working in awkward body postures, and performing the same or similar tasks repetitively.”. [*]. Coal mining activities often expose workers to hydraulic, electric, or motorized equipment. This equipment may be large and operate continuously or for long periods, and may be in close proximity to workers. So, the risks of being struck by, caught in, or crushed; are at times significant. And, motorized equipment may exhaust some of its emissions (fumes) into the spaces where workers occupy. For example, it is often very difficult to capture and vent all of the exhaust from a combustion engine. And, much of it may leak into the work spaces of miners. So, a particularly large health hazard, for coal miners, is the exposure to toxic atmospheres.

Workers may come in contact, often for long periods, with chemical, air, and dust pollution. According to the website “The World Counts”, underground coal mining often takes place deep into the ground, where mining wastes can become toxic when exposed to air and water. Such toxins include mercury, arsenic, fluorine, and selenium. [*]. Dust particles, especially, cause many health problems. Methane, a volatile gas, is often released by coal mines, and it is a known potent and flammable pollutant. Additionally, coal fires release carbon dioxide, nitrous oxide, and sulfur dioxide, among other toxic gasses. [*]. The website “Statista.com” reports that there have been over 66,000 deaths, directly as a result of mining for coal, since 1900. [*]. Although, the number of people killed in coal mining accidents has been decreasing over the decades; currently with less than 30 per year. But, historically, this has not been the case. In the coal mining industry, the early 20th century had an annual death rate of more than 1000 miners per year. Decreasing only gradually, for example in 2006 - 2010, there was an average of about 35 fatalities per year. [*]. Nevertheless, the number of injuries and illnesses sustained within the

industry remain alarming. For example, there were 4,400 reported non-fatal injuries and illnesses, in 2008 alone! Seventy-seven percent of which originated from bituminous coal underground mining [*].

According to an analysis by the National Institute of Safety and Health (NIOSH), “miners are often at risk of developing lung disease called pneumoconiosis (CWP); because of their exposure to airborne respirable dust.” [*]. CWP can cause impairment, disability, and premature death. Coal miners in particular, can suffer from Pneumoconiosis and silicosis, commonly called black lung. Currently, there is no cure for black lung. As mentioned, coal miners may also be exposed to diesel exhaust, which may cause asthma and chronic obstructive pulmonary disease (COPD). So, we can begin to see that the problems of respiratory diseases within the coal extraction industry have been historically severe. For example, in the 1970s 33% of miners with more than 25 years in the industry; had differing severities of CWP. Dropping to less than 5% in the late 1990s. But, again increasing to 10% beyond the 2000s. Per NIOSH, the most severe type of CWP is the progressive massive fibrosis (PMF). In 2010-2011, in a scan of 2200 miners, NIOSH found that 46 had CWP, and 12 had PMF. In 2016 alone, CWP was found to be a contributing cause of the death of 4118 miners. And, from 1970 through 2016 CWP was the underlying, or contributing, cause of death for a total of 75,178 miners! [*].

Finally, in a study called “Diesel Exhaust in Miners”, which encompassed more than 12,000 miners, it was shown that: a “significant increased risk of dying from lung cancer among miners who had ever worked underground.” And, it went on to state: “This risk increased as the miners’ exposure to respirable elemental carbon (diesel exhaust) increased.” [*].

I lived and worked in an area with many veteran and retired miners, near Birmingham Alabama. And, through my work, I visited some of these workers' homes; some of which were very sick and disabled. Some shared their conditions with me, and told me they had black lung disease, another man had a brain tumor of unknown origin. Some could not walk or move about, or do so only with much difficulty. Most of those ex-miners, whom I met, lived in very modest homes and neighborhoods. Per my research and experiences, clearly the situation has been dire for many that work in the oil, gas, and coal extraction. Their families have endured many of these hardships too, when these workers die from accidents or illnesses. In many cases, industrial companies have even profited from the deaths of their employees. This happens through a certain type of legalized life insurance, often obtained secretly and without the knowledge of the insured worker. The benefits of this insurance generally go entirely to the owners of the company, and not the deceased’s family. Some states in the US allow this; called “dead peasant insurance.” [*].

I personally suffered much as a fossil-fuel industry technician. I was exposed to petroleum products and fumes quite often and during my work servicing gas station equipment in South Florida, in the mid 2000s. I was so affected by these gas vapors on a routine basis, that I decided to purchase a filtered respirator on my own. During my stay at this company, they did not ever provide the necessary warning, the safety equipment, nor the training to be safe at work while working with fossil-fuels. Today, I believe I suffer from some health conditions extending from those long work days as a fuel equipment technician. During my time there, I found out about a “close-call” accident in which one of my co-workers almost died after he narrowly escaped a gas fume explosion and fire. This occurred while he and others serviced a fuel tank pump in a “man-hole” that had un-evacuated fumes. You see, many of these companies cut corners to save on costs, “get the job done”, and sometimes even to “stay in business”. And, many times these decisions are deadly or cause long term illness.

Collectively, we have treated industry workers as expendable and replaceable. The “high pay” and “good benefits” are hardly-ever considered “worth the sacrifice”; when you ask those that suffer the death of their family member, or those that directly endure the long term illness and injury. It is time to begin to change this paradigm. It is accepted that the fossil-fuel extraction industry is harming the planet. And, with this knowledge of the vast number of industry workers who are hurt, sickened, or killed yearly; it is my hope that you consider this is one more important reason to turn away from fossil-fuels. If we value the life and health of all workers, we must include fossil-fuel extraction workers.

Living off the grid allows you to do your part in significantly lowering those illnesses, injuries and deaths. I believe they are not worth-it nor necessary, as the products of the industry are no longer necessary, and in fact cause harm. It is time to begin the change and stop your demands from the oil, gas, and coal industry!

Section 03

Avert Compulsory Lifestyles

Introduction

Living off the grid allows you to deny anyone their “claim” on you. Many people, institutions, and corporations may think they can force you to do certain things, such as: pay money, work, or hand them various types of control over your life. Clearly, such things are not only immoral; but are also against all kinds of international laws; nation’s most cherished beliefs; and faith doctrines. Morality and many faiths tell us that we should treat others with respect and dignity no matter who they are. Given we accept these; we cannot force nor demand certain things from people. Support or allegiance in the form of monetary payments are among those things. Faith, in many instances, tells us to “treat others as we would like to be treated ourselves”, and to “love our neighbor”. Naturally, if we cherish our freedom of choice, and accept these ideas; we should not force others to accept a lack of freedom and choice. Also, the religious warnings against stealing, lying, and coveting; further tell us that we should be really careful on what we claim as “ours” and what we demand others to “pay-for”, because we claim it is “ours”. Other religious texts mention “...human dignity must be respected, regardless of his or her faith, race, ethnic origin, gender, or social status.” Also: “...humans must treat one another with full honor, respect, and loving kindness.” [*].

International laws and charters further solidify our beliefs that: “We are all born free and equal; have the right not to be discriminated against; have the right to life; the right no to be under bondage or slavery; have human rights everywhere you go; be equal before the law; have no unfair detainment; freedom of ownership; freedom of thought; freedom of expression; and the right to food and shelter.” [*]. If we abide by these religious ideas and international human rights; then we should not force any particular lifestyle on others. The United States’ most cherished beliefs include our acceptance of “equality; liberty; and the pursuit of happiness for all people”. [*]. Furthermore, the 13th, 14th and 15th constitutional amendments gave all people born in the US; freedom from slavery and its vestiges; citizenship and equal protection under the law; and the right to vote. [*].

Living off the grid empowers you to give those people, institutions, and corporations; that wish to violate your human, constitutional, and religious rights; the finger! Nothing outside of fair criminal punishment should be obligatory, compulsory, or forced. If you are reasonable, non-violent, and law-abiding; your will and hand should not be forced in any direction, by anyone. You should be trusted and free to make all decisions that you find reasonable; for yourself and your dependents. This is what “free nations” claim to have; “freedom and justice”. Yet, they have allowed too many of its powerful people, institutions, and corporations; to impose slave-like compacts on their citizenry.

Living off the grid reminds you that, no matter where you live, you are inherently free, and that you don’t need to enter into any compact, contract, or agreement that does not benefit you. Furthermore, living off the grid empowers you with the knowledge and technology to fend-off all your perceived “needs” to enter into those harmful agreements. As mentioned previously , I truly believe that, currently in most of our lives; several private and government entities use you as a carcass to feed from, and grow. These entities; the electric company, the water service company, the telecommunications companies, and some agencies of government; use their power and control as tentacles that attach to you as a sacrificial source of their growth. Of course, these entities provide the supposed “needed

services", and use those to eventually coerce large percentages of your resources. This tactic is also seen with so-called tech giants, providing "free" services, to extract your personal data.

Again, greed, corruption and abusive power; quickly overtake these entities, and they begin to do harm to most of us. Figuratively, these entities have quickly evolved to "monsters", largely because of the for-profit system that they operate under. A system that, if unchecked, can drain the goodwill from nearly everything in our society. I believe most of us have been "born" into bondage to these entities. And, many of us believe that we must be permanently subservient to them. But, that is just what we have been "trained" to think, and has been solidified when we become working individuals. We believe that we must: "pay" for your power bill; "pay" for your water; "pay" for your communication; "pay" for your food. Pay, pay, pay for everything, until you die! Pay for everything! Or, get evicted!; be homeless!; or be outcast from society!; or be jailed!; or have no credibility (credit)!; etc. It is as if you must pay to be alive and take space in your own nation. This is the definition of slavery!

Fear has been beaten into us; from the day we become aware of the dire consequences of having "no income", "low" income, and "not paying". I believe our world has enough resources to have "everyone" carry fulfilling and happy lives, free of charge! Yet, we are forced to believe that there is "not enough" for everyone, and that, despite our supposed advances in our economies; most people must still live in poverty. And, we are taught to believe that "submitting to the demands of 'the grid'"; i.e. working-for and paying-to someone else, for most of your life; "is the only way to escape poverty and despair." An off-grid lifestyle rejects this idea. It believes, as anyone should, that all reasonable, just and peaceful people; should be free of forcible work, payments, or in fact any coercion.

In the next few paragraphs I will explain how the grid, through the government; uses your local electric company; water and sewer company; telecommunications company; food companies, and real estate schemes; to keep you effectively "economically 'enslaved'". I will offer statistical data, real life testimonies, and solid arguments; that definitely prove this point. These will offer you extremely important rationales for you to embrace this lifestyle. So, get ready to be shocked, and perhaps "hopping-mad", and "fist-waving angry"; at the many bold and blatant abuses of the grid.

Avoid compulsory electricity services

Here, I will treat you to the machinations of your "friendly" local electric company. I bring you this first, because I believe the electric company is the one with the most power over you, your finances, your comfort, your livelihood, and in some cases; power over your health. There are many harms that your local electric company brings you, and it should be on the top of your list to get-rid-of for an off-grid lifestyle. These harms are: 1. Poor and working-class people pay much more than the wealthy for less electricity; 2. It h s incentives to grow and raise rates almost unabated; 3. In many cases, it treats its customers as "indentured servants"; 4. It is a harmful monopoly in most areas; 5. It is often a for-profit investor-driven corporation; 6. It wields and uses abusive power over you and your community; and, 7. It is wasteful and encourages you to use ever-more power.

Poor and working-class people pay much more than their wealthy counterparts for their electricity. Let's start with what hurts you the most, and it is that the electric bill seems to be too-often outrageously-high! Majority of people, in the US and the world, are working-poor to middle-class people. And the

median individual income in the US, the wealthiest nation on earth, is just over $31,000 per year. [*]. I live here in the US, and I can attest to you that this amount is not much to live on, especially in a mid-sized to large city. And, this figure, the median income, means that half of the US working population earn below this amount! The average electric bill per month in the US was $122 per month, in 2023.[*]. That's not to ignore that this average can swing wildly. For example, a household electric bill can commonly be over $300 per month. But, going with the national average, a little math will reveal that $122 is $1464 per year, and this median electric bill takes about 4.4% from your the median US individual income, or 2% from a household income of about $71,000. Regardless, shaving 2% to 4.4% from a hard-earned and precarious income is bad enough, but it gets worse.

Like I mentioned, about 50% of the US population, again the wealthiest in the world, make less than this amount ($71,000), and yet pay nearly the same (sometimes much more); as the average electricity bill every month. And, as we all know, we don't ever have the full amount of our gross income available; for us to spend a portion of it on electricity. Your income is almost always severely diminished by things like; all sorts of taxes, insurance payments, rent or mortgage payments, and many other expenses. Taxes and other monthly payments will often leave most gross incomes *unrecognizable*, if there's *anything* left of it at the end of the month. But, here will see how bad it is after only deducting the basics; what most US households always pay for: food and water, rent or mortgage, and taxes. So, let's run the numbers, shall we?

If we take a US household income of $62,500, which is the actual earnings of about 16%, the largest average income bracket of US households in 2021. And deduct the median average rent payments of $1702, for the year: $20,424; our precarious gross income is down to $42,076. [*][*]. Take out federal income taxes (ignoring all other taxes) of about $8,000, and we are down to $34,076. [*]. Further deduct average food costs, of about $4800 per year, and we are left with just $29,276 per household. [*]. Now, let's take this much-more realistic amount of available funds per household: $29,276, and pay for the year's electricity, and we find that it is a whopping 5% of that available income per household. Ouch!. If you happen to live in states where the average monthly electric bill is higher than average, say Connecticut where it is $156, then you're paying 6.3% of that available income. Double Ouch! In the US, a whopping 8% of households made an eye-watering $20,000 per year! Taking only $1500 in income taxes, and $9,600 in yearly rent costs, and $3,600 per year in food and water expenses; leaves that household with $5300 to cover all other expenses. [*]. If we were to charge this poor household the average electric bill per year, it would be a criminally-abusive 28% of their available income!

This gives you an idea of the sickening amount of money most people pay to the power company. And, it is actually worse than this! The power company has managed to tack on all sorts of extra fees to your power bill, on top of the already high rates you pay for your electricity. The average power bills discussed so far only include basic electricity rates. For example, I'm looking at my power bill as I write this, and 21% of charges have nothing to do with my personal electricity use. I have an "environment compliance fee", 9% of my bill; a "nuclear construction cost recovery fee", 2.4% of my bill; a "municipal franchise fee", 2.77% of my bill; and, of course, sales taxes, 6.5% of my bill. If you actually read your power bill, you may find ridiculous tack-on fees like these. The above rates and percentages should make it abundantly clear that the rates most people pay for electric service is not only high, but abusive!

If poor and working people were to keep from 2% to 20% of their incomes, it would make a tremendous difference in their livelihood. I recall, as a young man starting my independent life; I was outraged and

pained at the amount of my very limited income; that I had to pay to the electric company. And, as you may see, the bottom 50% of the economic classes suffer the most; under the current electricity rate system. Your “friendly” electric company; does not charge the powerful and wealthy a higher rate for their electricity; even though it does cost significantly-more to maintain and deliver electricity to their manicured neighborhoods. They still pay the same rate and the same fees as the poorest among us, and yet their income is often “incomparable” with the majority of our incomes. About 36% of US households get above $100,000 per year, with a smaller number of that percentage; getting multiple times that amount. [*].

Avoid ever-rising energy rates

To discuss the second topic of the harms of your local electric company; will move on to how the energy company has incentives to grow and raise rates, almost unabated. Recall how, on the last episode, I mentioned those brazen fees on my electric bill? Well, that exemplifies why most electric companies are corrupt. Why is the power company charging me, and hundreds of thousands of other customers, these ridiculous fees? A 9% fee for environmental compliance cost?; are you kidding me?! That’s analogous to me selling you a pig, then charging you extra for me to clean up the pig pen. It’s ridiculous beyond belief, and powerful corporations like the electric company have gotten away with more and more brazen practices over the years. You see, the only body that may curtail the power company from just charging you out-of-existence; is your states public service (or utilities) commission. This state or municipal entity, is supposed to ensure that citizens receive “safe, reliable and reasonably-priced electric and other utility services”. But, these commissions are often clearly “under-the-gun” of the giant utility companies. You see, utilities, like the electric company, have monstrous economic and political power. They are easily able to cripple the economy of entire regions, and even large parts of an entire state. This is largely because of the monopoly power that many electric companies enjoy, but also because of their “insanely large wallets”. Their greedy unions have the ability to slow down, or even stop production and maintenance of energy; which may slow down or stop virtually every industries in their zones of service. This is an enormous power over their service area and the government. And, other money and economic pressures can easily “encourage” commission members to do the bidding of the electric company. So, commission members often are beholden to the power of the electric company, as there are many known cases of corruption between the commissions and electric companies. [*][*][*][*].

I believe, the “unreported corruption” may be many times larger than the corruption that has been reported. This is because just about “everyone” needs electrical energy at a “reasonable” rate. And, just about “no one” wants to get into a fight with the very people that provide that energy, and also have the power to change those energy rates.

I believe energy rates keep going up every other month because commissioners are nothing but rubber stamps and yes men and women for the electric company. And, because they are simply outgunned by a giant corporation with handsomely paid lobbyists, who “expect” commissioners to “behave” and “not rock the boat” as soon as they are elected as commissioners. In many cases, electric companies are multi-billion dollar corporations with massive influence on many aspects of local and state governments. While utility commissions are made up of a few poorly paid individuals in comparison. Because of this disparity, and how the oversight system is set up; utility commissions across the US have allowed power companies to, not only recoup the costs of their new and ongoing construction projects, but also make a profit on those projects! You red that right; profits! Profits to the mostly private and for-profit electric

corporations throughout the nation. No wonders electric companies can often provide exuberant salaries, bonuses, and lavish pensions for their executives and other employees.

Additionally, this ever-corrupting profit making schemes; incentivizes the electric company to build more, and build for longer. Because they can make a profit from construction projects, per their utility commissions. This explains the massive waste and budget overruns seen in many of the electric companies construction projects. [*][*]. For example, Southern Energy and Georgia power have been constructing a nuclear energy facility expansion called Vogtle 3 and 4, in Northeast Georgia, for years. And, the project has stalled at least once, has had several major contractors pull-out, and its budged has ballooned-out to nearly double of its original estimate. [*]. And, guess who's paying for all of this waste; this company's customers, I being one of them. This company's utility commission, in Georgia, brazenly approved a rate hike of several dollars per month per customer; to "cover construction costs". This "rate hike" occurred without any vote or referendum from the millions of customers who are being charged for this debacle. This is what I mean when I say the electric company treats customers like "indentured servants", they ask you no questions, and impose just about whatever charges they want on you; knowing that you'll just capitulate and pay, in the end.

See, utility companies make money by selling electricity; rising rates; and including all those rash fees in their customers' bills. Theses problems are too numerous to list here, and I will only include a few links here; for your information. [*][*][*][*][*]. The power company already makes more-than-enough money by selling you power. [*]. But, their greed is apparently unlimited; and they take if further and grow, in size and wallet, by pushing for more power usage. This will be discussed in detail later. But to close; your electric company is forever-raising your rates, and is forever wastefully building more and more infrastructure; because of greed and corruption, enabled by how the system is set up. This endless growth in size and capacity of electric companies is unwarranted, because energy consumption trends have come down, not up, since 2007. [*]. Largely due to more efficient households and industry. Also, the electric companies have engaged in malicious schemes to slow and stop innovation and efficiency from happening. Ultimately, all these problems around your electric company are what make your electric bill balloon-out; every few months.

Avoid ill-treatment from your electric company

An indentured servant is a person placed under a work contract without pay for a definite amount of time, historically about 7 years. When you move into an apartment or house, you are handed two things for sure: your keys and the phone number for the electric company. The electric meter has already been installed for you and you are expected (most times required) to activate your electric service account with your only local electric company. That is the textbook version of *being placed* under a contract, as you are not being given a choice of 1. Do I even need or want the electric service? and 2. Do I have a choice as to where to get this service from? You see, choice is the only thing in a free market that regulates price; corporate benevolence and government regulation have historically not worked well to this end. This contract you've been placed under is quite longer than the historical 7 years of old. This is contract is basically permanent for the foreseeable future. If you move, the process will likely only repeat in another area with another single electric company. Once in this contract, you will have to produce an income high-enough to pay your ever-increasing electric bill (and every other bill) on time, every month, practically for life. Only to receive a service that costs the electric company pennies-on-each-dollar to deliver to you. The logic for this claim is simple. Electric companies charge for

construction projects, make a profit on those, then once it is complete; they generally charge two fees on that electric service, infrastructure fee and electricity fee. So, you basically get triple charged for the same infrastructure and service. So, your lack of choice, your utter powerlessness to switch electric company, and the abusive rates and fees you are made to pay without hope to do anything about it; put you in a position similar to indentured service. And, the electric company employees register this extreme power imbalance. At the realization that you are powerless and the electric company has you by your genitals; the electric company and its employees engage in a master and slave, or lord and serv relationship with you. Where you are clearly the slave, the serv, or pauper. This dynamic is more than evident when you call your electric company for any complaint or discrepancy with your bill. Many times the electric company employ call centers dedicated to taking angry customer's calls. These call centers are people that have nothing to do with the electric company and are just contractors and sub contractors trained to take calls and talk you into just having your meter re-read, or go over your electricity usage. Basically, they are there to calm you down and have you pay what you owe the electric company. There are countless horror stories about the relationship from customers and their electric company. I have had several of these bad experiences myself. I once had a working and connected on-grid solar panel system, and was using non-electric stove and clothes' dryer for many months; yet I noticed my electric bills where the higher than before I began to use these energy-savings technologies. However, when I called to complaint about this huge discrepancy, I was dismissed as using more energy and the whole ordeal being my fault. In another occasion, I called complaining of extremely-high power bills. At the time I lived in an area that produced nuclear power, therefore it should have been affordable. But, only after I threatened with disconnection did they actually lower my electric bill; proving that they were in fact overcharging me. Here are just a few of the comments left in an online rating platform, Yelp.com, about the local electric company here, Georgia Power, a subsidiary of the giant energy conglomerate Southern Power.

From Jill G. from Smyrna, GA; 10/23/2020; wrote on Yelp.com:

"They tried to say l let my electric bill double up and didn't pay. Thank God for online banking so l could disprove this LIE. How many other people have they stolen from? I wish l had another company to choose from besides this corrupt joke."

From Robyn K. from Gurnee, IL; 02/17/2019; wrote on Yelp.com:

"They are the most corrupt utility company I have ever dealt with and I have lived all over the world! I had over 700.00 a month electric bills and they did not work with me at all! I wish we had a choice of power companies, because I would never ever use them! Just FYI they are thieves!"

Robert B.; Key Largo, FL; 6/8/2022; wrote on Yelp.com:

"Promised to turn our power on today. Said it was guaranteed. Spoke to them multiple times. Here it is dark 9 pm and they never showed. Didn't call us either. Terrible company with zero customer service."

Shannon W. ; Buford GA; 07/28/2022; Wrote on Yelp.com:

“Our power bill was more expensive than what most people pay so we called to just figure out what we should expect to pay each month for our 1 bed, 1 bath and Bryan was absolutely no help at all and extremely rude. I am very unsatisfied with this company.”

In all honesty, these negative comments are the norm, not the exception, on this particular company’s comment section on this website (yelp.com). I chose this website because it seems to be among the most popular and least censored where customers can rate their experiences. And, from 140 electric company customer reviews; the absolutely-overwhelming amount were negative, rated as 1 out of 5 stars. There are many much longer and detailed negative reviews that share intimate and heartbreaking experiences, for example. Tenee B. From Auburn, WA. In 2/14/2023, he wrote: “...Let me be clear that I am a permanent and totally disabled veteran. Even though I fell behind last year, it was very tough for me and my family.” And he goes on a lengthy tirade. “...I have major health issues and if necessary I can provide the paperwork. By having me do Cash only [meaning customer cannot use other more convenient methods of payments like mailed in checks or online payments] of when I have multiple brain conditions and not a damn care in the world on how hard it is to manage that, 8 specialists, and adult child with ADHD, a child who is a minor, hit by a school bus, physical therapy, thyroid surgery, etc. (ALL HAPPENED LAST YEAR. AND THAT IS JUST A FEW THINGS). But again, don't give a damn.” And, the review goes on for a few more paragraphs, but you get the point. Negative reviews about power companies are too many and too lengthy to include here.

Other review websites have just as negative reviews about the electric company. Like the following.

Nissard; Atlanta, GA; 03/23/2023; wrote on consumeraffairs.com:

“Had a bad experience with them and their customer service in regard to extra fees that they think is warranted. Of-course they think that and because they're a big corporation, nobody is going to call them out on their unreasonable additional charges and that to for no effort on their end, $50 probably to press a button. Plus the customer service rep speaks over you like you took their money, be better.”

Ashleigh; Savanna, GA; 11/04/2022; wrote on consumeraffairs.com:

“I absolutely HATE GA Power, they take advantage of being the only option that we have for electricity services. I can call customer service 10 times, and each time they will tell me something completely different. They are only concerned about money and will do unethical things to get the money. They transferred credits without permission, they make it hard to get my credit returned to me, and they DO NOT CARE. I contemplate moving JUST TO GET AWAY FROM GA POWER. I absolutely hate how they handle business, and once an employee of theirs make a mistake at your expense, guess what? You're stuck paying more with no other options given. There is no such thing as customer service!!!!”

I have plenty of sour experiences of my own with the electric companies I have been a customer to here in the South East. I have lived, so far, in Dominican Republic, Florida, Georgia, Texas, Alabama, and Kentucky. When I was growing up in the Dominican Republic, I experienced black outs quite often. It was mostly daily when the power went off. In fact, at the evenings and nights it most always went ‘out’ for at

least a few hours. There was an electric power crisis in many parts of the mostly-impoverished city of Santo Domingo between the early 1980s and 1990s. Power generation, I presumed, could not satisfy the demands of the population, many of whom could not pay. I recall hearing conversations and reports of widespread non-payment of electric services. I lived in a slum, so perhaps most people there received limited electrical services that were largely unbilled. I don't recall witnessing or hearing about my parents, neighbors, or my friends' parents; routinely making payments to the electric company during those years. Most people I lived around were very poor, and hardly made enough money to pay for food and keep a roof over their heads. And, I assume most of the population of that city were in similar economic situations. Very few, per my experience, were affluent in that city. Complaints of power outages were abound, from the loud cries of disappointment when the power went out, to the many reports on the TV and radio of the rolling black outs that crippled many parts of the city and its economy. Curiously, I liked black outs, they did not bother me much. I was born into them, and considered them as normal as the starts being seen at night. In fact, the dark Dominican night sky of the 1980s-90s was peppered with brilliant stars and sprayed with seemingly millions of tiny white dots in the background. Sort of when you lightly spray paint a deep black surface with white paint. Blackouts also brought the relaxing peace and silence that is now absent in that city. Blackouts also made my creativity shine bright, inspiring me, under the candlelight, to put down on paper my thousands dreams, ideas, and concerns. Some of these I still preserve, some have unrecognizably evolved. Blackouts also allowed for children's story-time, intimate conversations, relaxing songs, and joyful play. These, instantly disappeared when the 'lights' suddenly came on. Blackouts allowed the neighborhood's children to engage in healthy outdoor games, these allowed me, and many other children, to explore places and relationships in the relative safety and privacy of the Dominican gloom. Or, that period of the night were light is scarce but is not yet dark, when we seemed to get a rush of life to wrap up our days suppose. It was largely during this time that adults and children engaged in 'life', at home, after a hard day's of work or school. As blackouts became less frequent, so did these experiences I was so fortunate in having. The draw of television, radio, music, and video games drew every child and adult away from each other and into their respective living rooms; shiny stars and running-arounds were replaced by shiny eyes and faces fixed on TV screens. These were the good times in the darkness of blackouts. There were other not so good effects I'm sure. Perhaps these interruptions caused the stagnation of much of the Dominican Republic in those decades. Robberies and other crimes occurred, in part helped by the darkness. I recall my father being on edge, one night, as he thought someone may imminently would break into our home. Blackouts surely slowed down tasks to be done at night, such as dishwashing, and school work. But not by much, candle light was always available, and the limited light, at nigh, I believe brought everyone better sleep and health.

The Dominican blackouts of the 1980s that I lived through were not without controversial management of the seemingly critically-limited available electricity. The Faro a Colon was a mega construction monument project conceived since the 1920s and started in 1986 [*]. It is a monument to Colonialism and European Catholic Christianity. It is a powerful lighthouse that beamed light onto the sky with such potency that the 'cross' shaped beams were seen reflected from clouds from over 100 kilometers around. The building complex is a huge zigarout-like cross shaped mausoleum with tons of high grade cement, lined with intricate and expensive stone work. It is said that the city was plunged into darkness when the lighthouse was turned on during the testing stages of the lighting prior to its inauguration. I recall vividly listening to the outraged murmurs and angry comments about it. A lighthouse being built with several tens of millions of 1980s US dollars, and taking many millions of watts of power to run;

while much of the city languishes in poverty, filth, abuse, and squalor. A city with no healthcare, social safety nets, and rampant joblessness engaging in lavish, and arguably useless, 'pyramid' building. Tens of thousands of families and individuals were evicted from areas in and surrounding the 'project' grounds during construction, and tens of thousands more were evicted for road and city 'beautification' projects in preparation to the coming 1992 Quincentennial 'celebration' of the 'discovery' of the Americas [*]. It seems the time it took for the project to be built is in line with the laborious exercise in ignorance taken to go ahead with it. Ignoring the violence of colonialism; ignoring the high costs of the project which were taken away from the needs of an entire nation; ignoring the blackouts, poverty, and joblessness; ignoring the silencing and shooting of protestors, and ignoring the fact the project was made to glorify the colonizers that enslaved and committed genocide. As if turning my back to the coming 'celebration' on the 12th of October of 1992, I and my siblings flew to the US in May of that year. Although it was much talked about in my nation, it quickly faded away as I was now focused on my new life.

My life changed dramatically when I moved to Florida in the US in 1992. One thing I noticed much was the constant available electrical power. The constant 'hum' of the cold air conditioning, and TV and lighting available any time of day. It was different and odd to me. My parents sacrificed countless family hours, their youth and energy to keep us under a roof, fed and with the lights on. The change was tough on me, and my siblings too, our anxieties were abound. Even in the land of seemingly endless power, the power did fail, and it do so spectacularly. In the summer of 1992 Hurricane Andrew directly hit the South Florida area. I recall the dark skies in the evening prior to the hurricane, as me and my father looked for some last minute food around our town's stores. He was toting an old bicycle as I walked beside him. The storms seemingly went on for most of the night. And suddenly, we lost power. We woke up to what last for many weeks of the same; no electric power, and much destruction to trees and buildings outside. After about 4 weeks of enduring the inconvenience of having no electric power, it was finally restored in our area. A few days to weeks later I recall my parents complaint of the high electricity bill. It was as if we had electric power all those weeks and then we got charge extra. I could not understand, but later I learned that the power company was allowed to recover much of the cost of repairs by passing it down to its customers [*]. So, seemingly, the charges for electric service by the local company, Florida Power and Light (FPL) never included a percentage to go to repairs. Bullshit! It did, FPL was only allowed by the state and local governments to pass down their losses, after surely collecting millions in private insurance and public emergency relief funds [*]. And, it was not the last time FPL did that, many more storms' damages to the electric grid would be paid in major part by customers [*][*]. Throughout the 1990s our biggest cost complaints, as a family in a household, were electrical service and phone service. By 1995, with 3 members of the family now contributing income to different degrees, electricity and phone were still painful bills to pay. In 1998 we had moved to an individual home at a nearby town, and we were doing much better financially. But the power bill was still our biggest expense, as a family, outside of housing and food. I became and independent working adult in 2001, and my first experience living in an apartment I rented was in Parker FL. There I began my truly sour experiences with the electric company. I was, almost immediately after moving, charged a ridiculously high amount on my power bill. It is as if they charged me for all the power used in the apartment as it sat unoccupied for months with the refrigerator on. I was so outraged by the high bill, that I immediately called and I was just given what would be the routine treatment; blame me for using too much power, and 'wash their hands' of any wrong doing. I was in such a precarious financial situation that I told the power company to disconnect, and that I would not be paying such outrageous

bill. They disconnected me almost immediately, did not care I was a just moved-in military member going through some distress. That electric company, like most others, are ruthless and will not try to help you if you are in financial need. Their first response is to cut your power, sit and wait for you to come begging for your reconnection, and then happily charge you higher rates, high fees and insurance, and a hefty reconnection fee. And, you will be put in a category of high risk customers that pay more, not less. So, electric companies primarily punish need, not aid it. And, the electric company's employees seem use people's need and precarious predicaments to abuse you and satisfy a sort of sadistic need to have you suffer. I chose not to use the central AC for several weeks to save energy, but to no avail; my electric bill was still the same or more for that month. And, when I called to complaint about my fruitless energy saving efforts; I was given the same "shpiell"; "I was to blame". In 2005, back in a South Florida apartment, I recall my highest payments were for electric power and for water. I recall 'having' to work ridiculously long hours just to keep up with the high cost of living of the area. I recall wanting to keep up with my power usage because I thought I was being overcharged. And, I was denied access to my meter simply because it was kept "locked"; that was the apartment building management's actual excuse. That hurricane season of 2005 was very active, hurricane Katrina made landfall between Broward and Miami-Dade counties and devastated much of the area [*]. Of course, the power went out for about 2-3 weeks in our area, and I recall clearly that our bill was higher for that and the months following months. I had the same question, does the power company recover its hurricane repair costs with increased customer bills, even though it already charges customers for such events? Even though I did not research it at the time, the answer to my question was a resounding "yes!". The abuse was obvious, but most people paid because they were desperate and knew how brutal it was to be without electricity. When I moved from South Florida to what I thought was a more progressive area in East-Central Florida, I encountered the same cut-throat and ruthless attitude with the local power company there. I was struggling financially and barely able to afford the very high housing costs of mid-2006. I had a lot of anxiety because of the long distance away from my place of work and the looming plans to change jobs. Although I lived near a nuclear plant, presumably near a source of relatively cheap energy; I began to see high power bills yet again. And, this was in a very small house of less than 900 square feet with 1 window air conditioner. I was so outraged at my power bills that I called the electric company in hopes of demonstrating the obvious discrepancy. I was naive yet again. The electric company was not interested in helping me, even though I explained we were a young family with kids and with little money. They still refused to point to help, although aid programs existed. After detecting the obvious and cold indifference of the young lady on the phone, in desperation I requested to be disconnected. She agreed I would be disconnected almost immediately. It is as if they have technicians on stand-by ready to disconnect customers quickly. This time, something softened her heart and I got a call saying that my power bill should be lower from now on. I was surprised and pleased at this admission and adjustment. And, indeed, my electric bill was lower for the remainder of my time in that location, proving to me that the power company was, and planned to continue, to rip me off. And, if it wasn't for my plead about young children and the threat to disconnect and make my family suffer, they would not have stopped robbing me. In 2008, during the depression, I once again became economically and consciously aware of how much we spent on energy as a family. I lived in an old 4-bedroom house that was quite inefficient and expensive to power. By 2009, I began to make efficiency changes to see what results I got. I installed battery lights in most every room. I installed a kerosene convection heater and stopped using the electric furnace air heater, I installed a tankless water heater, and began to build a solar water heater. Again, I noticed, that regardless of my electric energy saving efforts, by bill was about the same, or more, each month. I was

disappointed but undeterred, by 2010 I was experimenting with a battery bank, a wind turbine and a solar panel. I was spending $100s in what I was sure were technologies that were going to make a difference, if not immediately, in the future. I wanted to learn by doing and directly diving into these newly available technologies. Solar and wind energy were on the evening news as possible answers to the economic and looming climate crisis. And, if the nation seemed to want to recover financially by looking to be energy independent, then why would this not apply to the individual households. It was beginning to make sense. Energy dependency can hurt you financially and in other ways, and I felt the utilities were hurting me much more than they were helping, me all along. By 2011, I was in a new place, with a lot less bills and a better job. The next few years were the golden years for my renewable energy and living off the grid journey. I was determined to prepare to live off the grid and finally achieve this goal within months, not years. I began my electricity training via online and correspondence courses, I was working, and I was studying in university. I was planning, calculating, designing, drawing, building. I designed and built several solar panels systems, roof top, pole mounted, and ground based. I designed and built several outdoor battery bank systems. I purchased and installed several inverters, charge controllers, and disconnects. I even rented a local warehouse and tried to start a solar business. But it did not get the attention needed for me to invest more in it and grow it, so I abandoned it. At home, I installed a wind turbine on a 20 foot pole. I installed, used, and tested several complete solar energy systems both on and off grid. And replaced 2 of the 3 major electrical power hogs in the home, the electric stove and the electric clothes dryer. I installed LPG appliances instead, and had plans to soon replace the water heater with a tankless LPG. But, as I was performing all these installations and running all these tests and becoming more and more energy efficient, I actually noticed my electric bills rise. I was dumb founded and called the local electric company and explained my seemingly impossible predicament. My bills went from just under $100 average per month, to almost $170 per month. Some month's bill soared to over $200. In frustration I called the electric company several times, and all I got from them is the same. It is as if they play a recorded message when customers call in to complaint about impossibly high bills; they blame your power usage, and offer to read your meter again. In 2014, I moved to Alabama and lived there for about 1 year in an apartment. I continued my energy savings efforts there by using as the air conditioner as little as possible, and by not using the electric range. Instead I brought my camping LPG stove and used it everyday. There, I did not bother to call the electric company, I just saved energy and hoped that it made a difference. I moved back to Georgia in 2015 and ramped up my solar energy endeavors, building more systems and expanding my knowledge. I dabbed into installation services for solar as a business, and installed several small systems. In 2016 I decided to try a solar business again by renting a local retail space. Solar was popular and more affordable, and the place was in a busy street, so I hoped it would attract much more attention than my last try in 2011. I left my job and was completely dedicated to my solar business. I spent most of my day hours working on it and preparing for opening day. I installed a solar system at the store and did not connect any utilities, I was officially off the grid. I brought in my water for use during work hours, and had my lights and office powered by the solar system. I truly made an honest effort to make it happen. I sold solar technologies in the hopes to attract customers interested in installation services; which I believed to be profitable. I soon realized that sales alone were scarce, and that installations for homes required a contractor's license which I did not have. I thought about installations in RVs and Boats, but, money began to run dry and I had to begin to work in other fields. The business was closed while I went to work and it was not making head way. By the time I stopped working and dedicated my entire day to the business again, I was already thinking on how to generate income in that location with other things like renting part of

the space or selling computers and drones. That did not work either, things were looking dire financially for me and I decided to close the business come time to renew my lease. I was in debt and with low hopes of doing well in the solar business so I went back to employment. In, the next few years I participated in a series of jobs that super-charged my electrical knowledge and skills. I worked as an electrical worker, electrical designer, solar installer, and an industrial electrician. And, throughout these times, I decided to learn as much about electricity and electrical installations as possible, in part so it can help me in my efforts to get off the electrical grid.

After all the bitter experiences with the power companies from the 1990s to today, I am totally convinced that it is hopeless to try to save energy in your home, to pay less; and remain connected to the grid. I believe it necessary to stop your utility service, disconnect, and provide your own energy; this way you don't still pay for something you're not using, or get penalized for using less. You see, here, and in many of the 'backward' states across the nation, saving energy and using alternative energy is often discouraged and sometimes penalized. For example, if you have solar panels installed in your home, you often pay higher energy rates if you keep your utility power. And, if you have an electric vehicle, you have to pay a yearly 'penalty' tax over $100 [*]. As of this writing Georgia leads the way in penalizing EV owners with a yearly penalty tax of over $200. Furthermore, electric companies often publish 'news reports', and 'paper articles' discouraging the use of solar energy. I have seen and read many of these subtle and disguised reports.

So, I encourage you to search your local power company and their customer's reviews like Google.com and Yelp.com. And rate them on your honest experience with them. This, unfortunately, is among the few things you can do to try to warn others of the abuses you may have experienced. You may also file a complaint with your state's utility or public service commission, generally found in your states official website. You can also file a complaint with the Better Business Bureau (BBB).

In summary, the electric company is clearly infamous in talking down to their customers, especially customers of low income and with financial problems. It is only natural, when you have too much power over your 'subjects', you will abuse it. For this, most relationships between electric companies and their customers are include subservient customers and stone-fisted companies. That relationship is not likely to foreseeably change, so the best immediate alternative is to prepare to leave it.

Oppose the monopoly of electric companies

When an area has a single goods or service provider; this is a monopoly. Monopolies have historically been harmful entities, for various reasons. That is why monopolies are not legally allowed in most sectors and markets of the US economy. Monopolies are accepted as harmful because they generally drive companies to eventually harm their customers. These harms may come from the effects of: runaway greed; inefficiency and waste; unchecked price hiking; and abuse of power. Furthermore, having control over a vital resource, such as energy, puts whatever entity that controls it; in an unfairly powerful position. And, this combined with the power of a monopoly; makes it magnitudes worse. These unfair and unnecessary factors; lead to the electric company's virtually unchecked economic, social, and political power that we see today in many municipalities.

Abuse of power is when a powerful entity uses its economic, political, social or other type of influence; to manipulate, extort, force, or sway people, corporations, or governments to act in its favor. For example, electric utilities may abuse their power when they financially support elected representatives,

or utility commission members, in the expectation of “favors”. They may use their power to raise rates unwarrantedly, expand their reach, and grow their so-called “needs” with minimal justifications. Again, being in control of a necessity, while exercising corporatism, can be extremely harmful for large percentages of the population; especially those with low income. As this large percentage is the one with the least resource and influence to be heard or considered. It is like a silent majority.

So, why do most states, counties, and cities have monopoly electric companies? When you search for this answer, you’re often pacified with a bunch of simplistic explanations like: “the electric company is a classic example of a ‘*natural’* monopoly; because of the large fixed costs required for utility-scale power generation and distribution.” [*]. But, explanations like these should only satisfy the simple minded. What about the gargantuan costs of the large telecommunications companies? How can they afford it and remain in business? Why are there apparently ample choices in that industry? What about the paid cable television industry? And so on. Those industries also had to build their existing massive infrastructure over time, and still they were encouraged, in some instances forced; to accept market competition. The argument that “it takes too much money for a company with competitors to build and maintain a large infrastructure” is bogus. The electric grid was in fact built over time and in incremental steps, and much of it was funded by taxpayers and customers. Just as were other “essential” infrastructure; be it the water and sewer system, shopping malls, sports stadiums, and telephone and cellular company infrastructures. The more demand your electric company has, the more infrastructure they are “justified” to build. I say justify and not “required”, because it is not always a requirement to build more infrastructure; I’ll explain this elsewhere. A healthy amount of competition is good for the private sector. For example, if a corporation is unfriendly to its customers, or unsafe, or unreliable; it is likely that the demand for its product will decrease. And, perhaps if it keeps this up, it may go bankrupt and be forced to close. Thus allowing more efficient, safe, and friendly companies to take its customers. That is what is supposed to happen in a competitive market. However, this is utterly lacking in a monopoly; allowing for the waste, unsafe practices, and customer abuse to go on for long and rarely be corrected.

There are few areas that claim to offer energy supplier choice, under certain conditions. [*]. These are areas with “deregulated utilities”. In a deregulated state (or area) electric utility companies are allowed to participate in the open market, buying and selling energy to customers depending on market prices that they buy to later sell, wow! [*]. Even though this may appear as a choice; the company that owns the electrical infrastructure in your area still is in the game, big time!, getting a “cut” of the energy sold, and their fees are then added to your energy “plan”. [*]. This must be true, because the infrastructure cannot easily exchange “owners”. And, as everyone in a deregulated neighborhood may make different choices; the company that sells you the energy may change, but the source and delivery method must surely stay the same. There are 29 states that offer energy deregulation in all or some of their counties and cities. [*].

In my view, there is a problem with deregulation; although it is more preferable than a monopoly. In deregulated areas, allowing a bunch of private companies to buy and sell electricity on the very volatile market; is problematic. Markets may swing wildly, and can even crash, and if so; then what? Will you be automatically moved to your next best choice if your chosen electric company were to tank? Give me a break! I believe there are better options to monopolies or deregulated utilities; such as government ownership of utilities or cellular-phone-company-like ownership of utilities. A monopoly, due to the influential power of its participants, is difficult to regulate. They may, as it has often occurred, use their

power and influence to control the regulatory body that can keep it in check. In this case, the State's Public Utility Commission; a regulatory body that is supposed to manage and control the monopoly powers of utilities.

I believe electricity service is arguably more necessary than other services; such as telephone or television services. So, it is expected to be a lot more reliable, safe, and accessible for citizens. Furthermore, I argue that electric service is a basic need, and should be a right; because so much in our society now depends on it. From health and safety, to education and security. And, throwing such a basic need into the volatile investor-driven marketplace, seems a bad idea. So, partly due to these; I believe deregulation is risky and the wrong approach.

I believe, decentralization of electricity production and public ownership; to be better solutions to the current monopoly or deregulated-market system. Decentralization of electricity production is simply allowing the generation of energy at the local or community level. Using conventional and alternative energy technologies. This is now accessible, safe, affordable and relatively simple. For example, using solar energy technologies in homes, industrial plants, and commercial buildings. This is, and should continue to become, a rapidly growing industry for good reason. It produces the power right where it is used, diminishing the need for expensive infrastructure. It has been proven that with some regulation and enforcement; deployment of alternative power generation can be safe and inter-connectable. For example, communities may choose solar farms, individual or farms of wind turbines, etc. But, make no mistake. Here, I advocate for fossil-fuel based utilities to be gradually and completely phased-out. But, in the meanwhile they can be owned and operated by the public, the government, and be provided as a basic service just like education or the postal service. Electric services should not be for-profit, and it should be provided as a public service funded through taxes. I will expound on these and other proposals throughout this book.

Avoid greed-driven electric corporations

Another major reason why your local electric company causes harm, is because it is likely a for-profit, investor-driven, privately-owned corporation. Investor-owned utilities serve over 70% of all US electric service customers. [*]. You see, truly investor-driven corporations are "primarily" looking to grow in size and finances. And, corporations are rabidly looking to make profits, and pay out financial gains to its investors, first! All else is secondary. That means power generation, and you (the customer), come somewhere *after* profits. And, since their monopoly positions them securely as the only option; the customer satisfaction is generally, and naturally, really low on their priorities. In effect, these factors all incentivize inefficient management, and cruel non-caring customer practices! Investor-owned means private, profit-driven, and corporate; three words associated with greed, the fantasy of perpetual economic growth, and opportunity for bullying, manipulation, and abuse. And, disturbingly, these are the factors involved in what is supposed to be a simple straight-forward task: the generation and delivery of electrical energy. So, allow me to further expand on the concept of abuse, and why I believe it exists and is likely that it will continue; in your relationship with the electric company.

Abuse causes subservience, insecurity, anxiety, and dissatisfaction, hardship, and suffering. If some or all of these terms describe your relationship with your electric company; then you're likely a victim of its abuse. As described in an earlier section; abuse often occurs when there is an extreme imbalance of power in a relationship. The customer base, you and me, have a relationship with our service providers, including the electric company. And, for abuse to be minimized we, as a collective group, should hold

(more or less) equal power as our electric company. Such as the power to affect the decisions of the electric company; including decisions on energy rates. However, the power of the large majority has been eroded over the decades. Tell me, when was the last time you voted on an energy rate increase? You see, when large sums of profits are possible, these are often used to further expand the power of the profit-maker. Or, to increase possibilities for even higher profits. The electric utility companies have used their “allowed” profits making powers to take consistent and incremental actions to gain ever more power over us the customers. They have consistently lobbied, paid, for laws to protect their status and their profit-making abilities. They get their rate increases approved, and so on. These and many other greed and power related reasons are why your electricity bill is so high.

Lastly, your electric company really wants you to use more energy, not less, as they often claim. Their product is energy, and the more they sell, the more profit they make. So, there is no real incentive for them to want you to be efficient. For example, you may have been made aware of campaigns that offer you to trade in your gas-operated water heater, and in exchange “they” would freely install a “shiny and new '' electric water heater! I’ve heard of these several times in my areas of living, on the radio and TV. The reason behind this is not charity or benevolence. It is so they can sell you more electricity.

Avoid electric corporations that abuse their power

As discussed, your local electric company was likely given the right to be a monopoly, and it effectively may have the city, county or state public utility commission members in their pockets. As it provides a service almost as vital as running water; it has the potential to cripple the economy of a large area of a state at will. These, and more, are the reason why the electric company has too much power over you and your community. As a monopoly; they know you have little to no choice, as a customer, to leave them. Some areas and states don’t even legally allow you to disconnect from the electric company; as long as you live in your home. [*][*][*]. However the electric company holds all the rights to summarily disconnect your service; if you were to miss their payment. And, non-payment to the electric company may be followed by threatening notices from your landlord, city, county, or state, and may even lead to your eviction. Think about this for a few seconds, a private corporation having the power to evict you from your home!

Since the electric company knows you have nowhere else to turn, they often behave in an arrogant and even abusive manner. The electric company has among the largest and best paid work forces in each of the counties and cities of a state. It has powerful economic, social and political support behind it. And, has managed, all over the country, to get in bed with city and state officials responsible to keep it honest, affordable, and efficient. The electric companies have used their tremendous leverage on politicians and leaders, in part because these leaders need the electric company’s support in just about every economic project that city or state may have in mind. The electric company must be there and ready to deliver the power needed for all kinds of commercial projects, manufacturing plants, schools, hospitals, etc. Not to mention that electricity practically powers the entire economy. The power company is naturally going to want its agenda taken care of, and it clearly has done this over the last 128 years. It has established regulations backed by all kinds of laws that are part of almost every city’s or state’s statutory body. Again, many states, and municipalities have made it “the law'' that any dwelling must be connected to the electric grid when available. [*].

In addition to specific requirements to be connected to utilities for a dwelling to be “habitable”; municipalities have building codes and permit requirements that mandate the installation of utilities,

which must be inspected to be safe by the local fire department and the municipality's code enforcement officer. A home found to have no electricity will likely be considered "condemned" or unfit for habitation. This is partly because most areas in the US experience cold weather, hot weather, and darkness; the logic being that people living in modern homes "must have'' ventilation, air conditioning, and the ability to move about safely when it is dark. This logic, however, can easily be exposed as flawed, as anyone can safely make use of large windows for ventilation and cooling; oil lamps for light, and chimneys for heating. No electricity required! So, I suspect these convenient "laws and regulations" are more about taking care of the "needs" of the leaders of municipalities, and the wants of the electric company and its investors. In other words, these laws are more about them making money selling you services for a long, long time. But, I believe it is also about control, and not letting a few so-called "dangerous ideas" take hold in a population. Like ideas of sustainable living and renewable energy.

I believe the many states and municipalities that have not caught-up in passing legislation that limit or prohibit "disconnecting from the grid"; have not done so simply because their populations depend on the electric grid so much as for this not to be a concern yet. Or, because their populations are well-tamed and anti-progress. But, the right to be disconnected from the electrical grid as a constitutional or civil right has not been tested in the high courts yet, to my knowledge. I'll welcome any corrections here. But, it sure has been tested in many "lower" courts throughout the nation. For example, in Huntsville Alabama, in 2016, it was ruled by a court that: a man could not live "off the grid" on his own land. [*]. And, in 2016, a Cape Coral Florida woman was evicted from her home for insisting on living off the grid. [*][*]. When municipalities find it difficult to legally force a resident to remain connected, they may use citations based on a variety of "other laws" to: discourage, limit, or block anyone from disconnecting from the electrical, water, and communications grid. Such as: child endangerment; unsafe property; building and zoning violations; stealing electricity and other resources; unlawful disposal of hazardous materials; and even cruelty to animals. [*].

In summary, the abusive power of the electric company is evident and clear, especially for the millions that have lower income and have a harder time paying for its expensive services. If you are part of this majority group, you have no problems recalling an instance when you felt "pushed around" by your electric company. Additionally, this silent majority also feels the economic pressure put on them by the electric company. Unlike food, electricity is not a bill that those in need can easily get "help" paying for. So, when it comes to aid, electricity is considered a privilege that must be paid; by your government. But, when it comes to having a choice of source, company, or your ability to simply disconnect; all of the sudden electric service is a "necessity". Wow!

Avoid wasteful and inefficient electric corporations

As an investor-owned entity; the electric company is, by contract, obliged to grow in size and finances. It is demanded by its investors to produce positive returns on their invested capital. For this the electric company must do two things: 1, expand in size; and 2, sell more energy. In most areas, electric companies have done just that; almost unabated by their respective customer base and regulatory agencies. In most areas, it seems, the higher-demand through population growth is not enough. And, often, expansion into newly developed areas is not a choice as there is likely another electric company there already. So, sometimes, electric companies grow by buying smaller electric companies in their surrounding areas; so consolidating and expanding their power. This sometimes rapid growth; often leads to a more sluggish and wasteful company. Additionally, to generate more revenue, electric

companies push for more use of their product, energy. This is done in many ways; chief among them are the “encouraging” for less-efficiency from consumers, and demanding less-diversity of energy sources. This “encouragement" happens mainly through the electric company’s influence on laws, but it also happens through advertising and propaganda.

As you may know, larger corporations are generally more-wasteful and sluggish than smaller ones; this is a very predictable phenomenon. Larger corporations have more: moving parts; points of failure; overhead; employees. Therefore, more chances for becoming corrupt and inefficient, even wasteful. Take The Southern Power Company; a gargantuan corporate conglomerate that operates in 14 states, with concentrated presence in the southeast US, especially Georgia. It is the parent company for Georgia Power, the company that presided over (perhaps) the largest nuclear financial fiasco in history: the Vogtle 3 and 4 nuclear reactor expansion. This project was riddled with mismanagement; company bankruptcies; setbacks, delays; and eye-watering budget overruns. [*][*]. The project projected to top over 100% of its original generous estimates to the tens of billions of US dollars. All indicators of the wastefulness of this giant corporation.

Inefficiency does not stop at the corporate offices and the project construction sites; it continues down to the homes and facilities that electric companies serve. You see, the electric company must sell more and more energy to satisfy the apparent insatiable greed of its investors. For this, it naturally encourages you to use more power. It does this very subtly; like by offering you to replace your natural gas or liquid propane appliances for “shiny new electric ones”; and by inserting themselves in the building code offices of municipalities, and new construction projects; to recommend so-called electrical standards within their areas. It is no coincidence that electric company offices are strategically located near government offices in many cities and towns. For example, a litany of buildings in every city, like schools, hospitals, and office buildings, are often built virtually hermetically-sealed; where windows are built to remain closed shut. There, power hungry air and heating systems are an absolute necessity, because the public is highly discouraged from taking advantage of good weather. This is designed into each building, where some windows are not even able to be opened, with perhaps some exceptions for emergency evacuation.

Don’t be fooled by the so-called energy saving “tips” you hear or read from your friendly electric company; in commercials and on the back of your paper bill. These anemic and ineffective “tips” are purposely made to give the electric company the appearance of caring and empathy toward customers, and to keep you using as much energy as you have been, or even more. There is a reason why they only advise you to “keep your air conditioner’s thermostat at 70 in the summer and 68 in the winter”; and “to change all your light bulbs to LED”. That is because these are hardly a drop in the bucket in your energy use. There rarely if ever mention about season peak generation hours, rate fluctuation schedules, and your households known “power hogs”. You hardly ever hear that it is best to stagger your high power consumption during the day. And, there is a reason why you never hear, from the power company, that you should consider solar panels, more efficient air conditioner unit; a tankless water heater; a battery (wall) pack for energy savings, or moving large appliances to another energy source like LPG. All of these, and more, are orders of magnitude more significant in energy savings; than the anemic advice they parrot. In reality; the electric company wants to maintain the status quo or improve on what they’ve got. The status quo is the current system in which millions of customers are using and paying for massive amounts of dirty and inefficient electric energy. And, they want to keep or

improve on that. Because of market pressures. generating more demand, squeezing more revenue and more profits, and building more infrastructure.

The electric company routinely discourages environmentally friendly and efficient alternative energies such as residential solar. However, they love giant solar farms that they can build and reap profits-from. But, they despise roof-top solar. This phenomena is well reported, electric companies see roof-top solar panel installations as a possible threat to their high profits. [*] [*] [*] [*]. The push back is clear in legislation and regulation that limit the number of customers that are allowed to have roof top solar panel systems in each municipality. And, also the limits on or lack-there-of incentives to install these systems. [*]. For example, California, known for its prolific rooftop solar market; is capitulating to the utilities' demands and slashing incentives for roof-top solar installations starting the spring of 2023. [*].

For the many reasons above, electric service is a big reason to want to live off the grid. Living off the grid can empower you so you're not forced to accept and pay for expensive and wasteful electric services. As I will offer you later, you can produce your own electricity with technologies like solar panels and wind turbines. And, you can use other energy sources to offset your energy use, such as liquid propane, kerosene, natural gas, wood, coal, etc. You can even use alternative fuel (LPG, kerosene, or diesel) generators, although sparingly; to offset your lack of connection to utilities. You may opt to go without electricity. This is possible and practical in many areas of the US and the world. The point is that, the choices of: who provides you with electricity?, where is it sourced?, and how much of it you use?; should be yours. This must be so; until the day that electricity service is completely free of charges!

Avoid compulsory water and sewer services

Water service is the delivery of reasonably clean and safe fresh water for drinking, and other applications; for use by people of a defined area. It is the service of sourcing, treating (cleaning), and delivering water using various methods. Delivery methods used are usually pipelines and vehicles. The entities responsible for water services will be called here "water utility" if it is public, and "water company" if it is private. And, in general will refer to them as "water service providers". For the purposes of this discussion, "water service" will refer to both; the delivery of fresh water and the drainage of wastewater (sewer service). Although these two services may be performed by a different utility or company.

I believe water service providers have an abusive and compulsory (obligatory) grip on the population and communities they serve. Many times, very similar to the grip held by the electric companies. Although, the severity of the abuse may vary depending on the area, I believe it is fundamentally there in most cases. Water services are often handled by the local government (town, city, county, etc.). However, these public utilities work often in conjunction with private corporations and contractors for infrastructure projects, maintenance, and or financial services. [*]. Many areas of the world, including increasingly in the US, are serviced, in major-part or in-whole, by private (for-profit) corporations. [*][*]. Here, I'll call this the privatization of water services simply: "privatization". Well reported examples of privatization have occurred in England, Argentina, Bolivia, and Colombia. [*]. I believe, water service is not an absolute necessity for most people in a community, But of course, "access" to clean water via rainfall, or bodies of water (rivers, lakes, ponds, or underground reservoirs); is an absolute necessity. Water is a resource that has been here on earth, perhaps, even before the earth was still covered in red

hot lumps of rock. It is estimated that roughly the same amount of water that existed billions of years ago; remains here. Including fresh and salty water. Yet, we have found and allowed ways for our governments to claim water resources as “theirs”, and have even allowed corporations to buy its sources.

The logic is clear and basic. All life needs water to live. Humans need water to live. And, per all sorts of civilized agreements; no one may hold the ability to live, from anyone, unreasonably. To go against this is to participate-in or enable “murder”! So, according to this logic, no one should claim from themselves, or buy, an area’s water resource; with the goal to sell it only to those lucky ones that have the money to buy it. You see, water is different from a small plot of dry land, or a building that occupies a definite space and has little to no detrimental effect on large populations. So, we have agreed, as a society, that owning those is okay. But, on the other hand, water sources may serve as a literal life giving fountain to many other people. And, water is not static, it has a cycle. It comes and goes with evaporation and rainfall; it changes from liquid to vapor, and back to liquid. And, mankind has no control over this cycle; and they did not bring it about. So, reasonably, no one person or group should “claim it” as theirs. Because doing so enables them to literally choose: “who lives and who dies”. Or, at least: “who gets to live better, and healthier, or struggle and die earlier”. Yet, we have largely ignored this logic and allowed many wealthy and powerful individuals, governments, and corporations to claim, and secure-away, major water resources throughout the world, to include even rainfall. [*][*].

Like electric service, water service is already installed and ready when you move into a house or apartment. If you are among the few that can have your home built for you, water service is a “no-questions-asked” feature of your home. You are expected, and at times required to start and pay-for water services. In most areas in the US, especially in large cities, you are required to have, and pay-for, water service; public or private. Some landlords (property owners), even, require their tenants by contract to pay their water services, or face eviction. Like electric service, water service is usually provided by one entity in each municipality; and it is either the public utility or a private company. Since the water infrastructure is fixed, and cannot easily be transferred in ownership, the water service provider is normally a monopoly. And, as mentioned several times before, having “zero power” to choose who provides you with water; gives that single water service provider a “tremendous and unreasonable power”; over you and your dependents. In many areas of the country, especially the low-income areas, these “water service providers” can, and do, raise their rates virtually “at will”. And, they can, and do, shut down this extremely vital service; at the first sign of a late or non-payment. And, they can and do treat their customers as “trapped wild-game”; especially those of low social and economic power.

There is a reason why water service providers, like electric companies, have drive-thru lanes for payments. This is because large percentages of their customers routinely “fall-behind” on their payments, and are put on “cash only status”. And, these drive-in lanes are used to take their payments in person. These people are severely inconvenienced, to have to pay in person and in cash a vital resource. And, this and other intimidating tactics are used to subjugate the poor and middle classes of a community. [*]. The “cut-throat” and ruthless water service providers; will shut your life-supporting water service, no questions asked, if their demands are not met. I have been a victim of this myself in Dade-county, Florida. And, there were many other people caught up in this same abuse, where they are “made” to pay so that they can live. [*]. And, eventually, this grows into a sadistic and abusive relationship between the poor and those controlling the water. Because “they” know they’ve got you by

your genitals, and will “smoke you out of your home” and have you running to them to pay for this water service in addition to unreasonable “reconnection, late, and penalty fees”. I suspect many water service providers get sadistic satisfaction at having their poor and destitute citizens, many of them disabled, elderly, minority groups; come to them with their few gathered dollars; begging for reconnection.

To add insult to injury, water services, in many areas, have become extremely unaffordable. I have noticed this phenomenon especially in apartment buildings of mid to large cities. There, curiously, water services bills can be much higher than those bills for single family homes. I have had water bills average close to $100 USD per month while living in an apartment, in the mid 2000s. That is about 156.00 when adjusted for inflation for 2024. And that was while using just below average amount of water. This is a “sleep-depriving” high amount for a working family with a lower middle-class income. Just, imagine what this monthly charge would mean for a poor family. I understand that the water piping in multi-level apartments can be quite costly to maintain. And, even small water leaks can run up a water bill quite high. And, apartment building maintenance often “shirk” from costly plumbing repairs. But, I believe, and reports suggest that; is the “profit-making opportunities” of water services that drive the high bills. What better resource to get “assured payments”; than one that is essential to life? And, one that you are essentially “required” to have!

A study found that: “private water companies charge about almost 60% more, on average, than public utilities”. Some private water service providers charge as much as double the amount of their public counterparts! [*]. There are many municipalities that allow private companies (or individuals); to buy wholesale water from the public utilities. Such as apartment building owners. Then they sell that water to their tenants, likely aiming to make a profit. [*]. This practice is called sub-metering. It is reported that many private agencies “specialize” in sub-metering to “increase cash flow” to landlords and “raise property value” [*]. These practices are obviously abusive, and even criminal, and they take advantage of the most basic need, and of the vulnerable in our society, renters. Which are often the young or old, poor, immigrant, and or disabled demographic. Greed, it seems, has no limit. And, it has been allowed to make money from the most basic human need, aside from breathing air.

Here, I argue that water is a human need, and therefore should be a human right. And, it should not be sold! Because doing so targets the poor and destitute for no-service, or lower quality service, or limited service, or even less-quality water. Selling water basically divides between those that “deserve it” and those that “don’t”. Water and water service should be provided to everyone in the same manner, quality, and amount. Especially to those living in a modern and civilized community or city. These should be free of charge through a fair and progressive taxation scheme; where the very poor don’t have to pay at all. Additionally, I believe, people should not be limited, anywhere; if they can harvest or access their own water. In fact, people should be educated on *how-to* harvest and access water safely, responsibly, and efficiently. Especially where water services are limited or not available.

For the many reasons above, water services are a big reason to want to live off the grid. Living off the grid can empower you so you are not forced to accept and pay for water services. As I will develop in more detail later; you can harvest rainwater or tap into a natural water source; all free of ongoing charges. You can build and access a water well; pump water from a nearby river or pond, or even truck-in your water; every few weeks. Also, you may build and use a septic tank or a latrine; to avoid monthly charges for sewer. The point is, the choice of who and how they provide you with water, should be

yours. And you should be completely free and able to harvest and utilize water from nature. These should be true, until the day that water service is completely free of charges.

Avoid compulsory telecommunication services

Communication services, in the context of living off the grid, include your services for telephone (cellular and landline); internet; and paid television. Communication is sending and or receiving information via sound or vision. The methods in which you send or receive information are often called media (from the word medium), and may include your computer, television set, or personal smart device. Communication may be one-way or two ways. One way communication is when you only send or receive information; such as when you upload information to the internet, or when you watch a television show. Two-way communication may be a telephone call or exchanging text messages with someone. Today, there are many technologies that allow communications, with cellular telephones (smart phones) and streaming television (internet based); being the top two technologies used.

Clearly, communication is a basic human need. It has allowed humans to share information and cooperate from the very beginning. Surely, without communication, our modern societies as we know them would not exist. And, as enshrined in the US constitution's 1st amendment: the freedoms of speech, the press, assembly, and the right to petition; are protected rights. [*]. These rights would not be possible without the means for communication in modern society. These means include communication technologies. Furthermore, international law protects communication as a human right in that "everyone has the right to freedom of opinion and expression;…", that is per the United Nations Declaration of Human Rights. [*]. I argue here that communication is a right due to its basic uses for survival, health, and happiness. Therefore, no entity may impose limits on it. I believe these limits include: giving you only limited choices, and charging you out of service. And, to reiterate my logic on basic human needs; when you are limited from a basic need by being charged for it, this is the same as depriving those that cannot pay, or cannot access, the services that satisfy that need. This is immoral, abusive and criminal.

To be an active participant in our modern society you need to communicate using modern technology. And communication technology has changed fast in the last 30 years, so much so that you really need to keep up or risk being incommunicado. For example, a few years ago in 2013, I attempted to do contract work using old non-smart cellular phone technology. But, I quickly realized I was being left behind and considered as inefficient and unprepared for modern telecommunications work. I was expected to have a smart phone with photo and internet capabilities, to send information to employers right from the job sites. Instead I had to go home and perform these tasks, on a personal computer, hours later. I quickly realized I "needed" to upgrade to a smartphone. When I did, I was able to do all these "required" tasks, and keep getting similar work. Fast forward to today in 2023, I still perform similar work as a contractor on the field, and I could not fathom how all the tasks could be done without a smartphone. In fact, most jobs posted for me to bid-on "require" that you have a smart phone with internet capabilities. This story exemplifies how communication technologies and services are "necessary" for people to participate in today's economy, and even in social life. The advent of social media and its widespread embracing from young and old, have left those that do not participate in those in the "social inter-connectivity dust".

I argue that communication services and its technologies are needed for living an integrated, happy and dignified life, and therefore ample access to modern communication should be a right. Communication technologies and services should not be held back from individuals and families; simply due to their lack of money or access to that technology. These technologies and services should be free. Clearly as a society we have not reached this level of enlightenment; but I believe there is a light at the end of the tunnel. Some nation's communications programs do provide low income individuals and families with discounts on communications technologies and services. Sometimes, these technologies and services are free of charge. Cellular phone, telephone, and internet services may be provided in this way. [*]. But, these discounted and free services are still very limited or non-existent in most areas of the world.

Communication is a basic need, as established above. Basic human needs seem often to be the ripe targets of for-profit corporations. And, here I'll explain that you are basically obligated to pay for communication services; from a handful of providers that control the world market.

In the US, and in many areas of the world, communications services are eye-wateringly expensive. But, people feel it is such an important need that they are willing to sacrifice other needs, and pay the high price for these. I believe these are expensive because the prices are manipulated by a handful of giant corporations controlling the industry; as will be seen here shortly. At this writing, the average paid cellular telephone service bill is around $127, in the US! And, among the cheapest paid monthly cellular telephone service plans start around $60 per month, with very few exceptions. [*]. Also, the average internet service provider bill is around $64 USD per month. [*]. And, the average paid cable TV service bill was around $83 USD. Combine these 3 basic services and on average communications services bill totals to around $274 USD per month, ouch! And, there may be other services that a growing number of people now commonly pay-for, like: streaming services (internet television), podcast services, gaming platform subscriptions, satellite radio, and DVD rentals. These routinely increase their prices, so the trend for the cost of these services goes steadily up!

So, the cost can be prohibitive for many low-income and poor people in the US, let alone the rest of the world. I argue that you have little choice *but to pay* for communication prices "offered" to you. Otherwise, you will surely fall by the wayside, and have a hard time competing in our modern economy, and even happily participating in society.

In addition to the lack of choice of prices, or to pay or not pay at all; you have very few choices as to *who* provides your communication services. And, I believe this is likely the main reason why prices stay high. Per Statista.com, in the US; AT&T, Verizon, and T-Mobile smother 98.98% of all cellular telephone services market. [*]. And per Fierce Network magazine; AT&T, Comcast, and Charter pillage 77.5% of the US landline based internet service market. [*]. So, you may have a hard time finding alternative choices to pay less-to than what these telecommunications giants want to charge. Is true there are many choices of smaller telecommunication companies to choose from, like Cricket, Metro PCS, Boost Mobile, etc. But, these smaller companies all fall under the umbrella of the big 3 or 4 corporations that dominate the US market. That is because these big corporations "own" the land-based and space-based infrastructure, and naturally have the last word as to what everyone else that uses "their" infrastructure; pays. I put "own" in air quotes, because these companies often get hefty tax-payer subsidies for "their" infrastructure projects. In fact, only a handful of companies dominate most of the US market, and thus largely control the cost of communication services. In addition, many areas of the world are "dominated" by national or multinational telecommunications companies; which set the

trends on the prices you pay to access their services. Top among these companies include China Mobile, T-Mobile, Comcast, Verizon, and AT&T. [*].

For the many reasons above, I believe paid communication services are obligatory. I have little or no choice but to use modern communication. You either use it or be sidelined. And, you have little to no choice of the prices you pay to access these communication technologies. So, avoiding obligatory and expensive communication services are big reasons to want to live off the grid. Living off the grid can empower you so you are not forced to accept and pay for overpriced and choice-less communication services.

As I will detail in later sections, there are alternatives to paying for high communication services to a handful of corporations. You may position yourself to not have the need for modern communication services, and successfully cope with the social and economic consequences. Or, you may use other more-traditional technologies and methods of communicating; that are free to use. As of this writing, free over the air digital television, still exists although this is a service that is decreasing in importance to users [*]. Also, the elderly and free over the air AM and FM radio is still persisting around; offering some programs and entertaining music still worth listening to. There is also a variety of radio technologies that you can use to communicate with other radio users. There are various organized radio frequencies for use by people in the US and the world. In the US; Citizen's Band (CB) radio and Amateur radio are two popular technologies and radio frequencies that you may utilize. These just require acquiring and setting relatively-affordable and simple equipment. You may also communicate via personal (face to face) conversation; freely. Or you may set up and use a private telephone or computer network. Additionally, you may be able to use free communication services through the lifeline program (in the US), or similar free programs worldwide; where you may have telephone and or internet services for free. If you are lucky to have access to such a free service; you may enjoy most or all of the communication venues available online such as web browsing, streaming, email, social media, etc. Alternatively, you may be able to freely use someone else's telecommunications technologies or network. For example, using an "open" wireless internet (Wi-Fi), if the expense of having little or no privacy is okay with you. You may live in an area where businesses' "offer" open and free Wi-Fi, which can readily be harvested and used. Or, you may access open Wi-Fi from further locations using a variety of available or home-built antennas. These and other tips and tricks to free communications will be expanded in Book 2.

Avoid compulsory food-buying

Food is another human need and it has become the target for exploitation by government and private entities alike. I believe most people are put in a position, since birth, to depend on government and corporations to provide for 100% of their caloric needs. We are trained and "beaten" into believing that we have no choice but to buy "their" food, and that "their" food is the only that is safe and healthy enough. We are often denied the ability and resources to produce food, even a small percentage of the food we need. When we are totally dependent, abuse ensues. We pay high prices for food, and accept food from the source that is most readily available and the one we "believe" to be affordable. This is because, I believe, food is controlled by only a hand full of profit-driven, corrupt, and controlling entities that do not have our best interest in mind. But, we have a choice to say enough! and produce our own foods. And, to leave their expensive and chemical-smothered foods to rot on their fancy shelves.

We must eat to survive, and the government and corporate world know this quite well. They use this very basic need to get wealth and labor out of people for millennia. There is a reason why many working people mention “food on the table” when talking about their “need” to remain employed. And, you are taught as a child, in school and home, that you must “work to eat”. Many teachings and customs follow the Biblical passage “By the sweat of your brow you will eat your bread, until you return to the ground—because out of it were you taken.” [*] and the Qur’anic statement “"Nobody has ever eaten a better meal than that which one has earned by working with one's own hands.” [*]. These, and many other teachings and beliefs, have tied work and food. So, not working and eating have become taboo in our society, and something looked down upon. And, greedy corporations and controlling governments have exploited these customs, ideals, and beliefs to get ever more wealth and control from the vast majority of people. I believe food is a human right and therefore should be freely available to all that can’t pay for it. I also believe work is important and should be encouraged. But using starvation as an incentive for work is cruel, abusive, and exploits the poor and low income. We are put in a position of subservience and are prone to abusive treatment when we depend on the government and corporations for food. These entities disarm people early on by gathering large number of us into cities and giving the power to mass produce food to a tiny minority of people and companies. Most people are not educated, nor encouraged, to grow or supply their own food. Food production has been centralized to a degree that if food distribution as it is today suddenly stopped; there would surely be widespread starvation [famines], chaos, and despair. These have happened in many occasions throughout history [*], most recently, as of this writing, acute food crisis have occurred in Yemen, Ethiopia, Haiti, and Afghanistan. All, partly caused by over-centralization of food production. Most areas inhabited by people can support food production; yet most people are powerless to produce their food. They lack the knowledge, and in many cases the access to grow their own food. Many communities have outlawed people from having farm animals or growing their food even in their own available land [*][*]. Food industries like the orange juice and orange fruit industry in places like Florida have protected their market by holding campaigns to suppress backyard orange trees. I recall experiencing this myself where “officials” drove around many areas of South Florida demanding that people cut down their back yard citrus trees because of a certain “ citrus tree virus” that is spreading through such trees. These “officials” offered meager amounts to unroot people’s citrus trees. If people did not cooperate or refused; they often threatened the largely immigrant and low-income, communities with “legal” or “police” action if the tree was not removed on the spot. These campaigns went on for years later to be found as abuses mostly by Florida’s “better-off” communities outside of the Miami-Dade county [*].

Many communities in the US do not allow most farm animals to be kept within their limits. Cities, home owner’s associations, housing developments, and apartment buildings; are examples of places where many restrictions or bans exist on food production or farming on rented or private property. These entities cite the filth, noise, and the nuisance of farming activities and or farm animals. Effectively neutering any possibility for those residents to produce even a small amount of their diets. City dwellers are an overwhelming part of the US and world population (80%)[*], and cities are the most restrictive places for individual food production and farming. So, most people are either highly restricted, discouraged, and even banned from producing their own food. If you live in the suburbs of a sunny state, like I do currently, you may notice that almost no one utilize their yards for growing food. People have been so emancipated and become so accustomed to be depend on the supermarket that, for most families, growing food never even comes up for consideration.

The US and other industrial nations have done well with the logic that hunger does not make for happy voters, so the federal and state governments provide food help to the poorest among them. Again, mostly as a way to prevent widespread discontent at government. I believe this because you have to earn income below the poverty line to even qualify for food assistance in many states. A requirements that drive many to lie in their applications. As I write this food is among the most expensive of the human needs to satisfy, not only here in the US, but world wide. We are under runaway inflation prices, especially noticeable in food prices. Many blame recent occurrences like the Pandemic of 2019 or the war in Ukraine, and although these may be contributors I believe the prime drivers for the high food prices are the greed of corporations. As I write this, average food prices in the US are up around 9% on average [*][*]. With some areas of the country having food cost almost 15% higher than in recent months. To my experience, many basic food items have risen almost 100%, or double of what they used to cost. Milk, eggs, bread, and meat prices are, in many instances, over 100% higher prices as recent months. Those outside of the lavish wealth and destitute poverty cannot afford food without hurting financially. Wages surely have not kept up with inflation, eking up a anemic 4.6% on average in the US [*]. So, when we are rendered helpless to generate our own food, and the food prices are so high; naturally we submit to the system. We largely submit to the demands that we believe are required to "keep food on the table"; and we fall under subservience, control, powerlessness, and domination. We do what we "must" and not what we want or see as more productive; we settle for mediocracy and work long hours in jobs we don't like.

Food prices have been high before this recent inflation period, and are only now ridiculous; yet we chug along and pay because most of us are helpless. Food giant corporations know this and just keep raising the prices. The filthy-rich can easily afford expensive food, and the downright poor use government help to pay for it or just buy junk food. Everyone else suffers in pain at having to work extra hard, extra long to afford less quantity and quality of foods. In reality only about 10 major food for-profit corporations are behind most foods on supermarket shelves [*]. And, this is a major reason why prices go up as if in concert. These greed-stricken food giants are in close cahoots with each other, they are pampered and protected by the US government and act as a bunch of grotesquely obese pigheaded ogres pillaging from the corralled US population. They know well how the economy of food works, where the middle is the only economic class somewhat sensitive to food prices. And, without fear of competition from the world abroad, these companies have very little to worry about competition for prices. There is a reason why most foods in supermarket shelves are made domestically; that is because tariffs, laws, and regulations exist to protect the US food market. When have you seen Chinese eggs, Russian potatoes, or Argentinian milk in your supermarket shelf? Although many raw products are imported and exported, such as oranges and wheat, the US protects its finished food products closely for reasons of purported food safety and national security. I happened to have worked for a company involved the poultry and orange juice industries, many years ago. And, I can tell you that these industries are in their golden age; where the companies involved are making obscene profits. The industry's participants often have extremely well paid jobs with benefits and perks most other American's only dream of. Fat paychecks, late year company vehicles, big offices, generous retirement accounts, housing buyback options, yearly bonuses, etc. This protectionism of the food industry allows for the manipulation of prices by the big corporations and a sort of race to the top chasing profits; all on the backs of middle class America.

Living off the grid methods and technologies allow to produce your own food and not be abused by high food prices. You may finally have a choice outside of the 10 or so major food corporations controlling

the market. You may be able to produce your own meat, vegetables, grains, and more; all from your back yard or even your upper level apartment building balcony. You may be able to reduce, or cancel, the amount of money you hand to the big food corporations which have exploited your community for so long. Living off the grid may allow you to have more food security and health by empowering you with owning and maintaining food sources.

Section 04

Avert High Costs of Living

Introduction

I've spent the last section discussing why living off the grid helps you avert forcible (compulsory) lifestyles. Here, I jump into how living off the grid helps you avoid high costs of living. The reasons to avert high costs should be huge reasons to want to live off the grid. Efficiency can be directly measured by the costs incurred while living. As you know, living requires energy, resources, and time. These all have monetary value. For example, I have spent many years keeping an eye on prices of both; the electricity I pay the electrical company, and the cost of providing my own energy. I have also closely followed the amount and cost of the energy that people need, and the actual amount they use and get charged-for. And, I have come to the conclusion that I, as most other people, have been over-using and over-paying for all kinds of costs of living. Especially for costs of energy, shelter, food, and communication. For example, the energy I am being "fed"; is much more than what I actually need, and it has been artificially inflated in price for as long as I can remember. And, I am certain, I can save money if I were to replace that "fed" energy with self-provided energy. First, I don't need as much energy as the electric company wants to "push" onto me.

As I have explained in previous discussions; energy companies encourage more, not less, energy use. I don't need 200 amperes of electrical current at my electrical panel. I don't think I've ever "willingly" used more than 40 amperes at any one moment in my house; or anywhere for that matter. And, I don't use, or need, 1100 kilo-watt hours (kwh) per month, as I am routinely "charged" by my current electric company. I believe that most of us can do just fine with about 200 kilo-watt hours per month. But, my central air conditioner alone, if I was to use it as "recommended", uses more than 400 kilo-watt hours per month. And, I have calculated that most residences can provide a modern and comfortable lifestyle with less than 6000 watts of electricity available at any one moment.

And I've calculated that; the cost of the required energy-producing equipment, the cost to maintain it, and the cost work required to install, maintain, and use self-energy equipment,

all combined is still much less than the cost paid to the electric company over just 1 year. As you will see, this same pattern of "pushing you" to use, consume, and spend; is repeated over and over in many other areas of your life: water, food, entertainment, communications, and shelter. In fact, if there is a "need" for it, rest assured, there is an "industry" that exploits it. And, I believe that this exploitation has reached colossal scales here in the US today.

Cost savings should be among the top reasons for you to want to live off the grid. After all, "who wants to spend more on things you need?" As I will detail in later sections, and as I have alluded to so far; here in the US, it is much more expensive to live connected to the grid than to provide your own energy. You pay more for electricity, water, housing, communications, and food; when you depend on "connected" systems and industries. Yet, we see it as "normal" largely because those industries systematically push this belief; we simply were not taught otherwise; or most of our "peers" depend on these. Living off the grid is living efficiently, smartly, and in a way that helps you (and those around you) attain skills and technologies that empower you. It should make you aware of the high costs and financial traps all around you. For example, I believe you can and should always get water free of charge!

Also, why should I pay for food? A requirement for life. Especially when I can produce it, find it, or gather it on my own. Why pay for electricity, when I can generate it on my own? Really, the question is; how would you rather live? Ownership, access, and control of sources of basic needs; are almost always more economic than paying someone, the middle people, for them. These middle people, who have claimed that source and held it just out of the reach of most; don't belong there. You see, today's economies have evolved to have millions of these greedy middle people stand between these basic sources and you; holding their hands stretched out at your face. These rash-faced folks make a living from selling you what should be a given human right: water, food, shelter, etc.! Are you kidding me? They have, long ago, introduced themselves between you and these sources of basic needs, and over the years these people have bought out governments and established themselves as the norm. Think about it; you never invited these bold-faced opportunistic individuals to act as your dealers for basic needs. Yet, this happened long ago and well away from your influence. In fact, these scurrying little bastards have invited themselves, like rats in a kitchen; routinely violating your human, civil, and constitutional rights. Again, living off the grid allows you to claim your rights, have access to your needs free of charge, and finally dismiss these uninvited guests.

Avert high electricity costs

Recently, electricity costs have risen to an eye-popping 14.3%, between 2021 and 2022, in the US. That was more than double the overall rise in prices for the same time period between 2020 and 2021. According to UtilityDive.com, (January 2023). [*]. In November of 2022, it was estimated that 1 in 6 electricity service customers were "behind" on their monthly utility bill, about 20 million families. This figure had doubled since 2019, with the average amount owed at an stress-inducing $788. [*]. A disturbing 75% of Americans are said to "worry" about their utility or electric bills. And, hope is down for prices to stop rising even as the 2020s inflation starts to wane. According to an article in USA Today, (January 2023). [*]. As if wanting to pour salt on a gaping wound, one of the world's top producers of fuel for electricity, natural gas, goes to war and its supplies to the west are shut off in February of 2022. This resulted in the highest rise in electricity for homes in the US in recent memory. [*]. Needless to say, families have been hurting from high energy prices worldwide. And, governments and industries seem impotent to do enough about it.

This should be to no surprise. As described earlier, electricity companies are mostly for-profit businesses. In fact, monopolies; without competition, are currently allowed to make massive profits from their "corralled" populations (in many municipalities). I truly struggle to find more egregious and abusive relationships between corporations and their customers; than those found in the electric utility industry. And, the fact that this abuse has been, and continues to be allowed, is baffling to me. But, here we are, with a vast majority in the world's wealthiest nations; barely able, and often unable; to afford the cost of electricity. So let's dig into the details. For those of you that think your conventional utility company electricity is still cheaper than generating your own electricity; shall we do the math? Let's go with averages again, to keep it simple. As we discussed earlier, the average electricity bill in the US is $122 dollars per month, or $1464 per year. That is, per Nerdwallet.com, 2024. [*]. But wait, you don't just pay for electricity costs to your utility company, they "tack-on" many other fees. Some are quite ridiculous, like environmental compliance. Others are arguably illegal like "franchise fees" and "sales taxes". These "fees" often add up to about 20% more than of your electricity charges, so in fairness will

add a conservative 15% (or $219), for a total of $1683 per year. So, in just 4 years, with a very-conservative 5% energy cost increase per year; this amount balloons up to $7252! To put this into perspective; that is more than the median total bank account balance of most Americans between 35 and 64 years old. That is, per a Forbes.com survey, 2024. [*]. The average yearly total electric payments of $1683 is 2.74% of the median US income for working people between 35-44, in 2022 ($61360). Per firstrepublic.com, 2024. [*]. But, this income figure does not do justice to most American working families. In fact, 50% of all these families fall below this income level; in the US. The poverty threshold for a family of 3 is at $21,960 per year. And, tragically, many of the poorest families in the US; don't have access-to or don't know how to apply for electricity cost aid. So, working toward the poverty baseline, a year's electricity costs would be a head-holding 4% of a $41,960 yearly income; an jaw-dropping 5.3% of a $31,960 yearly income; and a drop-dead 7.67% of a $21,960 yearly income. To reiterate my earlier point; your income is rarely available in its entirety; to pay your electricity bill. It is most always first "decimated" by all sorts of taxes, rent or mortgage, and many other costs of living. In fact, the typical American household spends $5077 per month on all expenses apart from utilities (electric, water, gas, etc.). The average utility bill adds up to $734, the fourth largest group of expenses [*]. So, just to reiterate on how devastating an average electric bill is to the American family's finances; let's take that well-to-do and fortunate individual making the median US income of $61,360. Then, let's deduct all the typical non-utility monthly expenses, and she's left with $56,238. This is what is more "realistically" available for her to pay for her electric service, per year. Still, yearly electricity costs for this person would be a tick-causing 3% of her income! Yet, for too many Americans, a $122 average monthly electric bill would be a relieving dream come true. Many families are now living together, in fact about 31% of all households were multi-family in 2019. [*]. This means more electricity use for each of those homes. Electricity bills can routinely average over $200 per month, in many areas of the country. [*]. A commonly found $200 per month bill; can add up to $2400 per year, or $2760 with the usual 15% up-fees tacked-on. This would add up to over $11,000 in just 4 years. This amount could gut 8.6% from a very common $31,960 yearly-income. I know of many people living with their families making around 30,000 per year, before income taxes. I was part of one of those families up until very recently. In fact, the number of Americans making under $30,000 per year is about 45% of the working population, in 2022. [*]. Per the website, electric-choice.com; the average household spends about 2.5% of their entire yearly income on electricity. [*]. If you were to get a 2.5% rate of return on one of the mean US savings balances of $41,600; you would make $4,319 in just 4 years, without moving a finger. [*]. So, imagine what 4%, 6% or 8% rate of return would do for you! Likewise, you may appreciate how much damage these rates can do to your finances, if they are deducted from your precarious income. So, keeping as much of your hard earned income in your bank account is not only smart and necessary, but may allow you to grow your money if it is invested correctly. More importantly, you should have the full right to use that 2.5% to 8% of your income; on other more important things than lining the pockets of the electric company investors.

Now that it should be abundantly clear how expensive electricity is for most Americans, let's move on to the cost of alternative energy sources and compare. Solar is the most available, and simplest of all alternative energy sources today. It has been established that watts (w) is an electrical measure used to quantify the energy produced from light. Solar modules can be small (10 watts, 20 watts, etc.), medium (50 watts, 100 watts, etc.) or large (200 watts or larger). When purchasing solar panels in bulk they are often priced in watts, even if purchasing a few modules. For example, if you purchase 10 modules of 300 watts each module, it's actually a 3000W purchase. Thankfully, the price per each watt has been

dropping steadily since the 2010s. Largely due to the industry's growth and the worldwide market competition among manufacturers. So, today the price of new solar (photovoltaic) watts can be found as low as $0.60 (per watt), even less if purchased directly from manufacturers. But, on average US based companies charge you more, usually close to $1 per watt, due to delivery and price markups by pesky middle people. [*]. Recently, I've been able to purchase new solar modules for just over 0.56 per watt! As an example, at the expensive price of $1 per watt, 3000 watts (3 kilowatt) worth of solar modules can cost you $3000. But, just a quick look at ebay.com, google shopping, and Alibaba.com; can help you see how you can avoid high solar costs. As I will detail in a later chapter, 3000 watts (3 kilowatt) of solar panels is enough to completely power an efficient home for 20-30 years. Of course, you need several other pieces of equipment to work with the solar panels to have a complete solar power system. That equipment normally includes batteries, inverter(s), charge-controller(s), wiring, mounting hardware, and electrical safety devices, etc. For this 3 kilowatt system, these equipment can add several $1000 costs, give or take a few $100. And, if you were to pay a professional for the installation of this equipment, at the expensive rate of $2.5 per watt, you can add around $7,500 for such installation. [*]. So, in total, 25-years worth of just-enough electrical service for your home can cost about $16,500. That may sound like a lot of money for many, but that's only about a third of the cost of the average new vehicle in 2023. [*]. On the other hand, how much does it cost to pay for 25 years worth of electricity from the utility company? If you lived in dreamland and paid only the average electricity bill, no fees, and no increases; it would cost $36,600 for 25 years. But, more realistically, by accounting for conservative rate increases, fees, and taxes; you can expect to pay about $64,500 in 25 years. That is, per energysage.com, 2024. [*]. Needless to say, in this scenario, you would pay close to four times as much for utility electricity. That is, when you compared it with the 3 kilowatt system for solar electricity for 25-years. This is, on the very conservative side, if you happen to live in an area with higher utility costs; the 25-year figure could easily be in the six digits, that's over $100,000. Some, may still argue: "I can just pay my utility bill much more incrementally, slowly over 25 years on a monthly basis!". Yet, others may say: "most Americans just don't have $16,500 to pay for solar up front!" [*]. Both of these are reasonable arguments, but although the vast majority of Americans have less than $3000 in their bank accounts; people still find ways to purchase cars, motorcycles, boats, and furniture sets with similar price tags. Furthermore, there are things like in-house financing or bank loans that can facilitate slower, more convenient payments. And, even if you had to pry out the last penny off your piggy bank, in as little as 7 years; you may completely recover the entire cost of your $16,500 solar energy system. Furthermore, there may be federal and state government incentives that help you pay or give you tax credits for the purchase of solar energy systems. Massachusetts and New York leading the way with state government incentives in 2024. Illinois and other north eastern states have some generous incentives that help pay for solar. California just phased out their long running incentives, which helped it lead the nation (and the world) in solar energy. However, the American south, and the rest of the country are ranked from indifferent to hostile toward root-top solar energy. Currently, the federal government gives a tax credit incentive of up to 30% of the cost of the system components through 2032, thanks to the recently passed Inflation Reduction Act. [*]. All you need to do to apply for this generous credit is to file IRS form 5695 with your yearly tax forms. New York state, for example, has a similarly generous solar incentive that can qualify you up to 25% or $5000 (whichever is less); in tax credits for your solar system investment. [*]. Every state and municipality has different requirements for their solar system incentive, if they have one, so you must individually find information on your area's incentives if they exist. In the end, if you make enough income to warrant a tax burden; you may end up saving on that burden by

investing in solar. For the majority of the nation, who do not make enough income to have much or any taxes to the government; investing in solar is still a smart move as investing in a dependable vehicle for transportation or investing in your education. There are many programs in many states and communities that help economically disadvantaged people pay for solar technologies. California has an anemic but commendable program to help out their poor people "attain solar technologies, solar jobs training, and maximize energy savings"; with their Disadvantaged Communities-Single Family Solar Homes program. [*]. So, it is possible to get some assistance paying for solar technologies that can immediately (or eventually) allow us to live off the grid. And, this may spare the money you would otherwise pay your local wealthy utility company executive. Also, saving money to purchase a solar system is possible even for the poorest among us. Giving up unhealthy habits, going out less, eating less, and not paying for expensive phone or entertainment services, etc. These concessions can enable you to save money, even on a low income, and the savings may enable you to purchase and install solar equipment in cash.

To further undermine any argument on cost against solar energy, you may be able to acquire and install the 3 kilowatt solar system for even less. You may be able to do a self-installation if you are an electrical worker, electrician, or electronics technician. Or, you may want to train as any of these, and safely install your solar system over a longer period. All you need is some physical strength, the will, and perhaps a little help. Off grid solar panel systems and their wiring are largely harmless, as long as you keep the panels covered (with black plastic), and the batteries are disconnected with poles covered. You may perform an entire installation and wiring without any electrical energy running through the wires, then just hire or get some help to do the final connections. Plans, guides, videos, and specifications on how to install a solar panel system are plentiful. Courses on electricity or electrical work are available online and via classroom or correspondence. For example, I completed a correspondence course on basic electricity in about 6 months and a basic electronics course in about 9 months. I will include my own recommended plan for a basic 3 kilowatt system further in book 2. You may be able to save up to $7500 from the $16,500 installation discussed earlier and bring your total required investment to about $9000. You may be able to spend even less by opting for a smaller solar system. You can live quite comfortably and happily with 2000, 1500, or even only 1000 watts of solar energy. Naturally, smaller systems require you to be more efficient, and or use other sources of energy alongside the solar system. Wind turbine technologies can enable you to generate your own electricity. This technology, like solar, has been made more affordable and available over the last couple of decades.

Small wind turbines of less than 1000 watts (1 kilowatt), as of this writing, range in a few hundred dollars depending on quality. You may install and wire together several kilowatts of wind powered turbines, and charge a quality battery bank. The bank may cost another few hundred dollars to over $1000, depending on size, type and quality of the batteries. Per my experience, you may build a wind powered electrical system for a similar amount as a solar photovoltaic system, from a few thousand dollars and up. Exact pricing for wind energy systems are elusive; as the variety of equipment and systems are many. Depending on wind requires you to live in a consistent and high wind area. Many areas of the US, and the world, qualify as suitable for wind energy harnessing. If you want to limit your wind turbines to one, you need to use very little energy or get a larger wind turbine. Larger turbines can move a larger generator that needs more torque to generate more electrical current. I will discuss the details on some wind generator systems in Book 2.

You may choose set up a wind generator system that may produce energy for you for decades and save the money you'd otherwise have paid your electric company. I won't go into the potential cost-savings of other energy producing technologies, since the technologies vary and the scenarios for individual users vary so greatly. But, it can suffice to say that by both saving energy and generating your own efficient and renewable energy; you can definitely save and make money! As mentioned, wind turbines, fuel-powered generators, geo-thermal systems, and efficient spaces; may enable you to offset enough energy usage to need only a small renewable energy system. You need not "miss a beat" on what the modern lifestyles have to offer; by opting to use much less energy. You will, though, have to change much around you, and about you; more on all of these changes later.

Alternatively, you may opt "not to have", therefore "not pay for" *any* electrical energy producing system. You may know that it wasn't until the 1920s that electricity began to be used in most homes in the US. [*]. And, before that, people lived relatively-happy lives without electricity. You may be able to do the same, because, frankly, you don't need electricity to live. Most certainly; you don't need to pay for electricity to live. Trust me, if you stopped paying for your utility right now. Hospitals, roads, offices, and schools will still have electricity. The human body does not require artificial cooling and heating, it has its own under reasonable conditions. And, we do not generally need artificial lighting throughout most of your active day's hours. We really don't need to watch TV or streaming videos for entertainment, written works, story sharing, and live performances may bring more satisfaction to you. All the electrically-powered home gadgets have been pushed onto you over the years by manufacturer's at the delight of the electric companies. And, most are just optional perks for extra comfort; which you can achieve without any electricity. You may live a modern lifestyle without using any electricity. You may cook using LPG and flame; you may heat your room using a wood stove or kerosene heater; you may light your home using fire or natural sunlight; and so on.

In summary, utility electricity is too damn expensive in this high-consumption society; the US. And, many around the world are suffering economically. So, dumping expensive utility electricity, its need, and its use; are crucial steps for most that live in this society. I think of the benefits of *not* paying all that money to my electric company, and paying a lot less for the energy that I produce! These bring me satisfaction, freedom, technical knowledge, and financial rewards. And, these can surely apply to anyone, and you. And, with this more-efficient lifestyle you surely will be more economical in many other aspects and save even more money. Lastly, as your ingenuity and efficiency increases through your energy economy, so may your income; giving you and those around you; double the benefits.

Avert high water services costs

Water has increased in price steadily for several decades now. Since the introduction of the modern plastic single-use water bottles in the decade of 1990; the overall cost of water has steadily increased. I believe, this cost rise is largely because: the widespread adoption of bottled water; fears of contaminated or dirty tap water, which have increased use of bottled water and water filtering systems; and as the result of the increasingly privatized utility water providers. First, as the use of water bottles rapidly increased, and largely replaced the use of tap water, so have the prices of water in general. Especially high; is the cost for each ounce of bottled water. Even with this increase in cost, in the US, bottled water consumption more than doubled between 1999 and 2021. [*]. The trend on the price of

bottled water has been on the increase since 2014, and especially so during the pandemic years of 2019-2023.

This is, despite the expected, yet elusive; economies of scale. Where prices are “supposed to” drop with more demand and competition in the market. But, this upward trend is so, largely because many more people depend on bottled water. And, because so much more bottled water is sold. And, as more money is thrown at this industry, it has driven the water business to be lucrative. And, instead of lower prices due to economies of scale, the trend has been on the uptick. This massive upward trend has spawned the “expensive water” industry sector. This sector has capitalized on the group of people wanting to impress peers and or that truly believe that the quality of water is much higher when it is more expensive. Expensive bottled water brands like Fiji, Smart water, Core, Avian and Artesian; have taken advantage of this growing group of not-so smart consumers. Additionally, credible reports demonstrate that water quality of these “fancy” brands are insignificantly more than “cheap” brands, or even tap water. [*][*][*][*]. So, they heavily rely on aggressive marketing, and fancy packaging. These are what put most of the “expensive” in these bottled water brands. For example, celebrity athletes and singers charge millions to put their names and faces in front of some of these water brands. While these companies slip the cost right down to their customers.

It was also found that tap water can even be of higher quality than many bottle waters! Largely because there are often higher quality standards put on many municipalities tap water supplies; while water bottlers go largely unregulated. The EPA, for example, has strict standards on pollutants, chemicals, and contaminants in many municipalities of the US. [*]. Secondly, bottled water can be as much as 3000 times more expensive than tap water! [*]. However, I, like millions more, distrust unfiltered tap water; which often tastes metallic, looks clouded, or sometimes has a sort of insect-laden taste. This feeling of wariness is summarily understood by merely recalling the many national and international scandals and tragedies that have occurred; with public fresh water supplies. [*][*][*]. Recall the catastrophe in Flint Michigan in the mid 2010s; the Woburn Massachusetts water contamination in the early 1970s; and the Camp LeJune North Carolina water contamination that lasted several decades (1950s-1980s). And, there are hundreds of other cases. Naturally, the public gravitates toward the belief that bottled filtered water “must” be safer, and even smarter and cheaper than buying water filters. With some truth, water filters may not make much difference when safe tap water exists. And, when contaminated tap water occurs, most filters will not help much. Largely because filters do little to remove chemicals and some nano particles from the water. Also, many of these water filters have to be replaced every few weeks, costing significant money.

Still, water filtration technologies make up a gargantuan industry; worth billions of dollars. Xylem, Dow, Evoqua, 3M, and many other similar companies, have and continue to “rake-in” millions of dollars in profits each year; from the water filtration market. With the industry’s “salivation-inducing” profit margins of up to 35%, the water market is apparently “ripe for the picking”. [*][*]. Perhaps some examples of the high cost of “filtered water” can help you appreciate the problem. Shall we? A popular water filter pitcher may cost $30, but a 2-month filter for the same pitcher may cost a whopping $16, that is about $126 per year. Not a budget killer, but when coupled with the cost of water bottles and utility water service, this figure may balloon out quickly! It is estimated that the current average expense in water bottles alone is $266, in the US. [*]. If you happen to spend only half of that, $133, and still pay for the average US utility water service, $54; it would total to about $313 per year! [*]. This may not seem like a lot to pay per year, for many in the US. Especially for such a vital resource, right? But, hold

on a minute! we must always think of the bottom 50%, of the US population, that live paycheck to paycheck, or hand out to hand out. And, what about much of the rest of the world that live in similar precarious economic conditions. We must, especially, think of the 11.6% of the US population, and the 45% of the world's population; living in abject poverty, including extreme poverty of about $2 per day. [*][*]. These people could only dream to afford to pay $313 per year for convenient and clean water. So, no; it is "not" okay to allow water to be priced out of the budget of about half of the world's population!

In closing, I believe accessible clean water to be a human need for life, therefore a human right! To be permanently protected by US constitutional and UN international charters, laws and agreements. The "Right to life", mentioned in most of the free world's constitutional documents, surely includes the right to the basics to maintain such life. Water, food, and breathable air. If you deny any of these, you deny life; you charge for any of these, you curtail access to life. Curtailing a basic need to life, is making efforts to kill and murder, it is that simple. Finally, a private company is not obligated to serve you clean water for free, but a government that you support and maintain with your income, sales, and property taxes; absolutely should. This is especially a duty for any government that has promised to serve and protect its population. And, if you have allowed your government to sell you a basic need, I sure hope you don't allow it to block your access to water sources; many of which predated humanity. Rest assured; there are many alternatives to paying your local government, or a private corporation; for water. In the coming chapters, I will go into some detail on the methods and technologies available for harvesting, filtering, and storing water. But as a preview; rain water collectors, underground water wells, cisterns, water pumps, and hauling water; are all options that don't require a utility water bill. Furthermore, latrines, septic tanks, and just taking a squat in the woods; are further options to avoid a sewer bill for your waste-water.

Avert high food costs

Food is an important human basic need. Simply, without food or access to food, we die. And, with limited access to healthy and varied food; we become unhealthy and sick, and we may die much sooner and or may live a low quality of life. So, by this logic and by extension, again, denying or curtailing the access to food for individuals is akin to denying the right to life. And, by this logic food and access to food should be free.

With this as a baseline, any cost paid for food is too much. But, it is egregiously abusive when you are forced to pay a high price for a basic right like food. Food is the fifth largest expense for US families, averaging about $600 per month. [*]. My family, extremely cautiously, spends over $850 per month from a precarious working lower-middle-class income. And, I can tell you this is a big chunk of our monthly income, close to 25%. For many, especially young families, about $600 is an entire week's gross (pre-taxed) income paycheck , and if you have a large family, it is not uncommon to spend $900 per month for food. [*]. That would be a distressing 35% of that $600 weekly ($2604 monthly) take home pay! Food cost is especially harmful right now, and those outside of the comforts of wealth, or food assistance, are groaning in pain.

As mentioned, the recent inflation, of 2021-2023, has caused food costs to skyrocket, and in some instances double; in price. Egg prices nearly doubled from already-high costs in the early winter of 2023, and other food item increases ranged from 10 to 30%, since 2021. [*]. Remember, food prices were high

for most US incomes to comfortably afford, before 2021. And the inflationary increases have “added salt to the wound”.

So, the situation’s criticality is hard to appreciate. Food insecurity is defined as “...their access to adequate food for active, healthy living; is limited by lack of money and other resources. Some experience very-low food security, a more severe range of food insecurity, where food intake of one or more members is reduced and normal eating patterns are disrupted”. [*]. And, food insecurity is currently at a sleep-depriving 10.2% in the US; having a similar percentage globally. [*]. It is reported that “45% of child deaths are due to hunger and related causes”. [*]. So, too many in the US, and the world, have not and are not having an easy time affording food; to put it mildly!

This is despite the US’s, and the world’s, efforts to provide some aid to needy families. Access to food assistance in many states in the US is cumbersome, confusing, overly-complicated, and at times hostile for applicants to navigate. Requirements could be draconian and difficult to qualify-for; even for very-needy families. For example, in the far-behind-the-progress-curve state of Alabama, in the US, you must have no more than $2000; to even be able to legally apply for aid. And, for a household of 3 you must make less than $32,318 per-year, in gross income. Of this pre-taxed income; the take home pay may only be about $29,787 in income paychecks. [*]. This is only about $7800 above the federal poverty guideline income for a family of 3. [*]. And, of course, these required income amounts are taken before deducting all other costs of living. It was recently reported that a family of 4, on a tight food budget, may be easily spending close to $1000 on food; during the recent inflation period of 2022-2023. [*].

It is needless to say that the price of food is volatile and seemingly-permanently on the rise. And, our greedy and mostly capitalist societies appear to be using the basic “need” of food to reap grotesque profits from their captive populations. You see, these corporations have grown to have gargantuan economic and political power, and naturally they routinely abuse this power. One way they have done this is by bidding to oppose the social programs that fund food aid. For example, the CEO of Goya, one of the largest canned foods companies in the Americas, announced his sanctimonious support for the very presidential administration that supported a deeply-slashed food aid budget in 2019. [*][*]. And, large fast food chains, and food manufacturers routinely and quietly donate to US presidential campaigns; who are historically hostile to social programs that help the poor. These include: Wendy’s, McDonald’s, Dunkin’ Brands, among many others. [*]. For example, the 10 largest US food and beverage companies “followed suit” with this anti-aid-program agenda.

So, your governments (federal, state, and local) are very much “in-cahoots” with food companies, and they are clearly “helping each other out”; at your expense. Legislation is routinely passed to loosen-up all sorts of restrictions on the way food companies operate, while simultaneously being used to lower food-aid budgets. Take the case of Georgia; when, in the midst of the pandemic, its governor opted to deny much-needed federal-aid, that would have helped its anemic aid-for-needy-families. [*].

You are effectively forced-to-pay for high food prices, largely because most of us have been rendered impotent to produce any food. As discussed earlier, we lack the education and hands-on experience to produce any significant amount of food independently. It is simply a skill and subject utterly not-discussed in schools nor around kitchen tables. The norm is, and you are expected-to, buy all your food, and work to get the money to buy food. I strongly believe that this is a “premeditated condition” most of us are herded to fall under.

But, there are other choices. You don't need to "buy" all of your food. Food has been built into our ecosystems since before farming began 1000s of years ago. And, we all have the right to access and eat that available food, all free of charge. All this is according to our morality, humanity, religions, and international law. We cannot be prevented, or otherwise forced-from producing our own food.

There is a vast body of knowledge in food production. But simply; planting and maintaining seeds or food-producing plants, in fertile ground, is the start to it all. Of course the soil type, sunlight time, and temperature available; are some factors to consider when attempting to produce food from plants. And, the type of food and the growing season are affected by your geographic location on the planet. If plant based food growing is your goal, you should learn much about this subject through education and practice.

You may also raise animals for meat, milk, and eggs. Methods and technologies available to grow farm animals for food, while off the grid, will be discussed in a later chapter.

There are a variety of diets and food choices that affect the type of food production methods, resources, and costs necessary. But it is absolutely possible to save big when you produce your own food. You may even produce enough to completely avoid having to buy food! You may even produce a high-enough quality of food to give it to others or sell it. Food production as an occupation brings virtually-unlimited varieties of lifestyles. These depend on types of food, capabilities, and many other factors. For every household and individual willing to produce food; it is difficult to estimate costs of producing food. But, we may begin to estimate the savings of not purchasing food at the supermarket. Per year, savings can add to over $12,000; in many cases. For example, you may be able to cheaply generate 10% of your food-supply; potentially keeping about $1000, per-year, in your bank account. Also, you may become an off-grid part-time farmer, and produce, say, 80% of your food. And potentially keep $8000 in your bank.

So, the savings can be substantial. But, I believe the larger reward of self-sustainability in food production is the fact that you control your food supply. Not, your trusty local business person, nor any government. You can closely control the food quality that you and your loved ones consume. And, you also know that you are *not-supporting* a rotten and corrupt system of corporations that is willing to abuse the public to increase profits and power for itself.

Avert high telecommunications costs

As established, communication is a basic necessity and therefore a human right. Basic modern methods of communication necessary to participate in society and the economy shall not be curtailed by any government nor institution. This I believe. So, by extension: 1) you should not be "made to pay" to communicate, even when using modern technology. 2) Average people should not be exhaustively exploited, as they are, by being charged ridiculous sums to communicate; and 3) people should be given the benefit of the free market, and be allowed to enjoy the competition of their providers for lower costs. I believe these to be quite reasonable requests, so lets dig into the details. okay?

First, as established earlier, you are being "forced" to pay to communicate using modern methods (cellular phone, telephone, and internet networks) because it is necessary to remain involved in the modern economy. You have no choice, when the choice is to pay or be destitute. This is despotic, barbaric, and undemocratic. It is no different than forcing you to pay. Furthermore, depending on your

location, not having a cellular phone, and paid service for it; is potentially dangerous. Since, public pay phones are 'a thing of the past', and calling for help or emergency service can happen only if you, or a good Samaritan around you, has a cellular phone to call. I could not think of a technology more critical outside of basic needs. So, governments and corporations have smelled the blood, and are out in a frenzy. They know you "need" your means to communicate and are poised and ready to exploit you based on this need. They want you to pay and pay big!

Second. it was earlier established how very few telecommunication giants dominate and manipulate the US and world markets, "ventriloquizing" the prices 'you must pay' for telecommunications technologies and services. Governments have allowed corporations to merge, over and over, to the point where only a hand full of humongous enterprises now exist. [*]. These then gobble up smaller competitors as soon as they become a viable company. The myriad of smaller companies are "allowed" to exist only as fronts to the workings of the larger ones. "Allowed" to exist only because they largely depend on the infrastructure and price dictations of the large enterprises. This situation where captive populations are made to buy products and services from a few 'providers' naturally causes a 'runaway' effect on the cost of telecom technologies and services. The likes of which we are experiencing today.

A quality cellular phone can cost upward of $100s, and even over $1000 for the 'latest and greatest' models. Cellular telephone service may cost from $50 to $100s per month in the US, perhaps slightly less in the wider world. The average cellular phone bill in the US adds to nearly $1371 per year. [*]. Add, other communication services bills such as internet services, paid-television, and landline telephone; and amounts get farther from the comfortable reach of most US citizens, and certainly cause economic stress for the rest of the world. In fact communication is usually bundled in the cost of housing, because it is sometimes considered a utility; making the largest expense for most US households. [*]. Adding a cable-TV, internet, cell phone, and streaming services; is not uncommon to pay a conservatively estimated $280 per month, that's $3360 per year. Huh, ouch! Late fees, repairs, replacements, and other unexpected charges can rack up your yearly communication costs near $5000 per year. Some horror stories, where your bill unexpectedly swells up, can batter your finances even further. I am sure just about everyone has had a horror story to share about their cellular phone, cable tv, or internet service provider. I have had the chance to work for several telecom service provider companies, including Bell South, A.T. and T, and Direct TV, and I can tell you that there are too many horror stories in memory alone to list here.

It is common knowledge that for-profit corporations, as all communications companies are, strategically price their technologies and services to maximize profits. This means pricing to capitalize on defaults, late payment fees, reconnection fees, insurance fees, and many other types of fees. Timing of their billing cycles and when mailed bills are sent are at times strategically done to minimize payment time and maximize late payments; thus capitalizing on fees. Convenience fees and other dubious fees are routinely inserted in your communications service provider bills. Things like 911 services and FCC fees are included on your service bills, as if these agencies are not being thoroughly funded by other taxes.

The bold high costs and the brazen fees charged by communication service providers are abusive and out of control. The slaughter must end, and stepping outside of this for profit grid of services is the most powerful way to do it. People have found creative and excruciating ways to pay for communication services because they don't know alternatives exist, and because it would be so devastating to just stop communicating.

Lastly, the telecommunication industry has been inching toward becoming a practical monopoly for decades. Large mega telecom corporations keep gobbling up, and allowed to merge with, other telecom smaller corporations. This gets us closer to having only one giant corporation dictating how much, and what customer service quality we get. For example, the industry is controlled by a hand full of giant telecom corporations: AT&T, Verizon, T-Mobile, etc. While the many smaller telecom companies do and say whatever these top few tell them to. So, even if your company is a smaller, seemingly more affordable and friendlier, telecom company. This is only an illusion. Because they can only charge and do whatever the giants allow. This is so, because the giant telecom corporations own the bulk of the infrastructure used by all telecom companies; the satellites, ground cabling, and the towers that span the globe. Without these no telecom company can exist, and the small companies do nothing but rent space on these infrastructure owned by these giants. Thus, the price of your communications is ultimately dictated by a handful of companies.

So, make no mistake, you are paying what these giants demand, and not a penny less. Ultimately, this situation is close to a monopoly, with very small amount of competition. And, make no mistake; these giants are in close cahoots with each other. High-fiving behind closed doors, while acting like bitter rivals in TV commercials. They “all”, control the price you pay for your internet, phone, or TV service. And they are, each year, extracting record profits from you, the customer.

As I will detail later, communication may be completely free from monthly charges; if you so chose. It does take a relatively small initial investment, and learning its operation. But technologies like radio-transceivers may allow for free over the air communication. Television and radio are also still free when over the air. And, there are programs like the FCC’s ‘Lifeline ‘ which may provide basic internet, telephone and cellular phone services to low-income people. You may access open and freely accessible networks with available antennas and wireless computer network adapters. Which can provide just about everything you need to communicate and stay informed and entertained. Alternatives to ‘just paying for your’ communication services may save you $100s or $1000s per year. All whilst becoming more tech savvy and staying a participant in our modern economy and wider society.

Section 05

Self-sustainability

Introduction

A central advantage of living off the grid is your ability to be self-sustainable. Here, self-sustainability is simply being able to provide basic needs for yourself and your dependents; “freely”. You may argue that, if you are a working adult, you’ve been providing yourself with basic needs, freely, all along. But, in fact most of us have not. We have been mostly merely “buying” those services and goods, without choice as “where” and “how” to get those. We’ve been “paying” for water most of our lives. Or if you are luckier; taking “purchased” water and drinking it. We’ve been paying for most of our food; we spend vast amounts of money on it, and follow the expectation to drive to the supermarket, and purchase it. We’ve been paying for our shelter, which was provided and built by a bank; for you to purchase at a high cost.

We are expected to depend on other people for just about everything, and we just “pay them” so they can keep providing those things and services to us. We’ve turned into walking ATMs, spitting out money everywhere for everything we do and get. Then, what happens if the money you have runs out, loses value, or you become unemployed? What happens if there is a catastrophe, war, or a pandemic; that stops the economy for some time? Do you have the skills to provide your, and your loved one’s, basic needs using resources you can access? The key question here is access, and I believe, self-sustainability satisfies all of these questions.

Self-sustainability is achievable to varying degrees, of course, accepting the fact that you cannot be completely detached from your environment and other people. Self-sustainability is simply having the skills, technologies, and “access” to resources; to provide basic needs indefinitely. As discussed, your access to free water, food, and shelter should not have been curtailed. They are human rights! But, since these have egregiously been allowed to be severely curtailed, in your past, you now have to be extraordinarily creative and fight your way back to gain that access. Living off the grid helps you gain access to those resources, and gives you tools and skills to sustainably use, protect, and share them. You may be self-sustainable in basic needs and many other non-basics. In earlier chapters and sections, I focused on the disadvantages of being forced to use, and paying the high cost for: Water, food, shelter, energy, and communications. Here, I argue that “free access” to those are part of self-sustainability, and are “basic needs”. So, I will introduce them here, then will be detailed later.

I believe that self-sustainability, among other endeavors, satisfies your personal and intellectual growth, pursuit of happiness, relationships, etc. How this occurs may be touched-upon throughout this text. But here I will focus on the advantages of self sustainability for water, food, energy, and communications.

Be water self-sustainable

The economic advantage of being off the utility (purchased) water grid should be plain by now. When living off the water grid, you obviously still need to drink water. So, a tried and tested, running water alternative system should be in place before any talk on disconnecting from the water grid service. In fact, you should have more than one alternative water source “at-the-ready”, that is how important

water is. You may already have an alternative water source, as many people purchase bottled water in addition to having their utility water. But, if you want your water to be “completely free”, as it should be, you will have a lot of work ahead of you. Technical details on water harnessing systems will be discussed in book 2. Here, I will briefly discuss what it takes to be “water self-sustained”.

[1] You need to find “water sources”, gain access to those sources, and dependably maintain access to those. [2] Then, you need to get the water to you. It may take resources, technology and some work; to get the water from the source to your place of living. [3] Also, you have to use the water with systems that pipe it and run it to where you dispense it; for drinking, washing, etc. [4] Lastly, you may want to, or need to, store water. This also takes some technologies, space, and other resources.

[1] Utility and purchased water sources are too easy to find. In fact, I believe utility water “found you” when you first moved to your current place of living. And, it only takes a trip to any store to find water for purchase. However, other water sources exist that can be accessed and used free of charge. All water from all questionable sources should be tested for contaminants, then treated and filtered as necessary to prevent health problems. For example, rainfall, a great free water source, happens often in many areas of the US and the world. Here in the South-East US, rainfall is plentiful, sometimes a bit too much. And although rainfall may be relatively clean and safe, to drink directly from its source (rain clouds); it may need filtering in many areas. You may harvest rainwater in most areas of the US without any restriction. All you need are clean containers, such as buckets, and a little space on the ground for you to place the open containers when it rains. You may get a lot more intricate and fancy and build a rainwater collection system, if you have the space and the resources.

Rainfall runs down to the lowest point by gravity. So, underground water, or groundwater, is everywhere. Water wells are structures or excavations that permit access to groundwater. Groundwater may be freely accessed in most areas of the US and the world. But, you do need to have access to the land to access and use groundwater. You may buy or rent the land, although this makes your water “not free”. An initial hefty investment is normally needed to build a groundwater well. It generally utilizes an electric or mechanical pump to extract the water, which may be many meters below ground. Bodies of water like rivers, lakes, and ponds could be accessed freely for water. You may or may not be able to build a permanent method to extract the water from these sources, since they may be “managed” by your city, state, or other government. But, you surely may extract as much as you need, or can carry it, for a short period of time; using containers and pumps, for example.

Of course, you should ensure you have legal access to the land where these bodies of water are located. You may be able to extract large amounts of water, in a truck or pickup, then treat and filter as necessary. Treating and filtering water takes equipment and expendable supplies, such as filters or salt, which cost money. But, the cost should be a fraction of what you would pay for utility water and or purchased water in the long term.

There are times where utility water is very expensive. For example, I used to routinely pay over $90 per month for utility water for an entire year at an apartment building in South Florida in 2005. That is around $147 in today’s money. Back then, my water bill alone added to over $1000 paid for 1 year, around $1700 today; for a basic human need.

An alternative source to utility water, if it is less expensive, is just buying filtered water in big jugs. You may have a water dispenser, and you can have several of these, 3-5-gallon bottles, and refill them much

cheaper than purchasing water by the gallon. Also, you may opt to refill your jugs at a location where you have access to with free potable water. Being water self-sustaining permits you to raise a “satisfying finger” to the abusive and corrupt utility water system, and can potentially save you $1000s per year; gives you resilience to utility water contamination events; and gives you the peace of mind of having access to alternative, secure and safe water sources.

[2] Many technologies exist to harness and deliver the water for your use. A local rainwater collection system requires a way to collect and channel water to your place of final use (fossette, spigot, shower or bathtub). For example, If you collect water in a kid’s plastic outdoor pool container, this water needs to then be pumped to a closed storage container. From there, it needs to be piped, using plumbing and a pump, or by pressure or gravity to your dispensing place. If you harness water from the ground, pumps, plumbing, and filtering equipment are needed for delivery to the final place of use. If you harness water from a natural body of water; the best option, again, would require plumbing, a pump, and means to store and filter that water.

Trucking your water in, or buying or refilling water bottles, requires you to go to the source, and refill your bottles for you to haul it back and use it. This last option requires some manual lifting and dispensing of water, a vehicle, and perhaps lift equipment. Having running water is the most convenient way to use water. Running water is water that is in your home’s plumbing, with enough water pressure to dispense vigorously. Water pressure can be achieved locally (on site), by pump systems with reservoir tanks. But, normally, utility water has adequate pressure because large pumps and tanks are used in those systems. You may choose “not” to have running water, and use your water by pouring it with containers. Although this method is considered Spartan; in time, it may become second-nature and not inconvenience you from living a modern and happy life.

For the convenience of running water, there are a myriad of different pumps, plumbing, tanks, reservoirs, and filtering technologies and equipment; that you may use. Acquiring and maintaining water service equipment, and knowing how to test, treat, and filter water; are technical requirements for being self-sustained with water. Book 2 will introduce you to some specific water service and treatment components, and how to install, maintain and use them.

[3] Using water wisely is a big part of being self-sustained with water. However, knowing the quality of the water will take some knowledge. For example, knowing the chemical composition of the filtering methods used, and the possible contaminants to look-for in water; will take some research. If you get water from a wild body of water, there may be biological contaminants that may spread disease, such as animal or human poop and pee. These may make their way into these bodies of water; as do animal decomposing carcasses, chemicals, and other contaminants. Rooftop water collection systems can introduce petroleum and other chemicals from roofing materials to your water. And bird and rodent droppings, as well as other pollutants. Even rainfall may be already contaminated with air pollutants [*]. So you have to be aware and ready to filter, and chemically treat, rain or natural water; before you use it for yourself-provided water.

You would be wise to conserve the water you treat and filter; since it takes resources to do so. Sometimes fresh water is scarce in your area of living. For example, you may live in an arid and dry area, where rainfall and bodies of water are precious and guarded resources. Or, you may live in an area with tight restrictions in accessing free water, or that have pollution problems, such as large cities or industrial zones. If so, you will not want to wastefully let clean water run, or leave clean water leaks

unfixed. In these situations, you must also be wise in selecting your source of water. You shouldn't just go for your nearest source without investigating it. For example, if your nearby pond has a surface film with a multi-colored sheen, you shouldn't get your water from there, regardless of the treatment system you may possess. So, good judgement, conservation and maintenance skills, and strategic sourcing; are things to have, before considering being self-sufficient with water.

[4] Storing water is an important part of being self-sufficient. Storing water acts as a buffer for those periods when water flow is scarce or absent. Your water source may become contaminated or dried; rainfall may not come for many weeks, sometimes months; or your access to your water supply may be blocked for whatever reason. During those times, you still need to drink and use water. Water which you have hopefully stored. There are many methods to store fresh water: Containers, tanks, and cisterns; are among the more popular ones. Water containers come in all shapes, sizes and materials. Because of this variety, water containers are widely, and mostly, cheaply available. The 3 or 5-gallon bottles, and buckets, are popular water containers. I think the 3-gallon bottles are more convenient for continuous handling, or for those people with more limited strength. You may go big, and have a container of many dozens of gallons.

Of course, stored water, especially that stored in large containers, generally has lifeforms unless chemically treated. This requires that containers be exceptionally clean and that water is continuously used. Water that is chemically untreated, which sits in place for an extended period, will likely have these lifeforms multiply and grow. Films of these lifeforms will likely grow on the surface, or in the container inner walls, which may affect the quality and safety of your water. So, you shouldn't have a "get-it and forget-it" attitude with storing water. It needs careful and strategic management, maintenance, cleaning, and treatment; of the containers and water. I will go into more details on these aspects of storing water, in Book 2 of this text.

Be energy self-sustainable

As I have alluded-to so far; you have many incentives to want to be electrically self-sustainable. Remember, your electricity service is mostly obligatory and you often have no choice as to who is your provider. And, your electric company is often indifferent to your needs, disabilities, and income level. Your power company is often abusive and corrupt; not to mention that your electricity bill is among the highest expenses of your household, certainly here in the US.

Biologically speaking, the human body is electrically self-sufficient. You do not need an external source of electricity to live. The human nervous system produces electrical charges constantly, so "you may say" electricity is within each of us. But, external electricity, and technologies that use it, have allowed us to live healthier and more comfortably. And, electricity has allowed us to perform more work. Also, external electricity may be used to save our lives with health care interventions. For example, with electrocardiogram (EKG) systems, surgeries, etc. It is undeniable that modern society would not exist without the use of electricity. So, it is hard to overestimate the importance of electricity in our modern world.

However, we have been taught, from a young age, that we 'need' electrical energy to live "normally". We subscribe, or are subscribed, to electrical service contracts since we begin our independent lives;

and use and waste millions of kilowatts of electrical energy. And, we have accepted to demand and depend on having electrical energy available in our homes, places of work, and places of play. In many areas of the world; we expect our homes to be air-conditioned and lighted in every room; we want our jobs to be computerized and automated; and we want our parks and restaurants to be lighted and available well into the night. I believe we are addicted to high amounts of electrical energy, much of which is utterly wasted.

First, I believe we don't need all this energy, that many of us pay a high cost-for; to have available. I believe, and have proven, that we can live with a fraction of the energy that most of us currently use, and be just as happy and productive. For example, Since 1970s, household appliances have become "orders of magnitude" more-efficient. Yet, by the 2010's, electricity use per household had almost doubled [*]. I believe this trend was driven by more abundant use of electrical air conditioning, water heating, and the electrification of many other appliances in the home. Still, since about 2000, even higher-efficiency electronics and miniaturized electronics have become common. This should have allowed for an ever-decreasing demand for energy. But, as of this writing, we have not yet experienced this "expected" decrease in electricity "demand". [*]. Much of it, likely due to our culture of wastefulness. A culture that I believe has been driven from the top down.

Nevertheless, advances in alternative energy production, and renewable energy storage technologies; present the possibility to "affordably produce, store, and use your own electrical energy." Thanks, in part, to the 2008 depression, the world supercharged efforts for energy independence unleashing the massive renewable industries that we now have. We now have competitively-cheap solar photovoltaic technologies; powerful and durable batteries; affordable and dependable electric vehicles; and wind energy is more-affordable and accessible. Ultimately, now, more than ever, we have the possibility to affordably-disconnect from the electrical utility, as individual households, and still have electrical energy available.

Electricity self sustainability is simply providing your own electrical service. In fact, you'd own and operate a small electric power generation plant. There are several affordable and relatively-simple ways of doing this. The simplest, to my estimation, are: using solar photovoltaic (PV) energy generators, wind energy generators, or conventional gas generators. These all have advantages and challenges: [a] solar photovoltaic is, by a considerable margin, the most affordable, simple and available method. [b] Wind turbines are convenient technologies which you may use, in high-wind and low sunlight areas. And, gas generators, although polluting, offer an option to disconnect from the grid and use sparingly. Other less-convenient and affordable ways exist, which require more resources and concessions. Still, these are less costly than remaining connected and paying for grid electricity. These include: [c] using fuel generators, rechargeable batteries, or simply living without electricity. But, before diving into any of these options, you must determine if disconnecting from your electrical grid is legal and worth it for you. And, if disconnecting is not a legal option, you may still rely only on your own electrical source by "not using" grid electricity.

The steps on exactly "how to disconnect from the grid" and "generate your own energy" are many, technical, and detailed. So, these will be discussed in Book 2. But, there are a few basic pre-conditions and technologies to secure before "pulling the plug" from your local electric company. Again, the following options are required only if you choose to have electricity. Remember, living without electricity is possible and does not necessarily mean quitting a modern lifestyle.

So, you must be as “electrically efficient” as possible in your household. You must be able to legally stop using grid power, or disconnect from your electric utility company at your location. You must be able to safely and legally install, use, and maintain your own source of electricity in your home.

Cutting back on the energy you use, and still performing the same or more activities, requires planning, efficient methods and technologies. Efficient methods are the smart choices you make to save energy. Actions such as turning off your water heater when not in active use. And, ensure you turn your air conditioner (AC) off during the day or when it is safe to do so. Or, actively adjusting the AC thermostat, to the level where it will turn on the least, while still providing a good level of air flow and comfort. Efficient technologies, in turn, are more-efficient large appliances and electronics, and yes; light bulbs too. These more efficient tech; may cost slightly more, but at times cost the same or less, depending on availability. And, although more efficient technologies may cost more initially, in time, the cost to run them may save you enough money to offset its initial higher cost. For example, today an electric vehicle (EV) may cost up to $10,000 or more for a comparable internal combustion engine (ICE) vehicle. But over time, this higher cost is generally recovered in savings from not purchasing fuel and other non-required maintenance. So, getting a more efficient air conditioner, or water heater, will likely save you money in the long run. Especially if you get those off from household electricity, like getting propane (LPG) or DC powered units. For example, if you switch your air conditioner from 220-volts to a smaller one that runs on 110-volts. So, being electrically-efficient not only saves you money with the energy you *don’t use*, but it allows you to spend-less on the off-grid systems that will provide this energy for you.

Before you disconnect your electric service, ensure that your community “legally allows you” to live without an electrical connection. Your landlord, or rental property owner, may “require” utility connection by contract. Rental property owners may not be happy at the prospect that “their” rented air conditioning units and refrigerators are sitting unused, perhaps from months to years. As they strongly may believe this may damage those units. But, with simple steps such as drying and covering those units; damage can be prevented. More details on these in Book 2 of this text.

Some covenants, towns, cities, counties, and states require an electric service connection for inhabited homes, by direct or indirect laws. By “indirect laws” I mean they can require an electric service connection due to a variety of “other laws” that are on the books; like “child welfare, safety requirements and other building codes”. Alternatively, you may “keep” your electric service connection and simply shut-off your main disconnect, thus preventing any use from grid power. Remember, you can not be forced to use any service that you pay for. In other words, you cannot be forced to pay! Stop and think about this concept for a few seconds. You can not be forced to pay! You cannot be forced to pay for a service. You cannot be forced to pay for electricity. I truly hope you get this point. Furthermore, if you can safely and responsibly provide an alternative electrical service on your own, this destroys any remaining arguments against forced connections. Lastly, even without electricity, anyone can live modern and happy lives, and certainly can remain safe.

To avoid costly fines and legal trouble, you must install your energy producing system legally. Most communities have building “codes”, prescribed by the “authority having jurisdiction” or AHJ, such as your town, city, county, etc. These building codes are often derived from national codes such as the several published by the National Fire Protection Association (NFPA); the American Society of Heating and Refrigerating, and Air Conditioning Engineers (ASHRAE); among others. Commercial builders generally follow these codes for the safety and convenience of the community and individuals. So, any

newly installed electricity-producing-system must “meet code”, and often must be installed by state “licensed contractors”. These or other requirements may apply for your AHJ, so I highly recommend you search, read and understand those requirements; before planning to disconnect your electric service or installing your own.

Keep in mind that; being off the grid means that you will not be connecting to, or using the electricity, wiring or equipment that is connected to the utility grid. Therefore, rules that apply to “grid-connected” households should-*not* apply. With focus on “should-not”, because your JHA may find creative ways to impose their wishes on you. Again, ensure your decisions comply with the verbiage of your AHJ “requirements”, and you may have arguments to stand-on if ever challenged about your actions.

To be self sustainable with solar is relatively simple. Solar photovoltaic is a renewable, quiet, safe energy generation source; that requires only basic to intermediate electrical and mechanical knowledge to install, maintain, and use. The main components are the solar panels, the inverter (which is sometimes optional), the charge controller, and the battery or battery bank. These are to be interconnected using wiring of various lengths and sizes, as prescribed by the national electrical code (NEC) and the manufacturers of the equipment. Panels receive sunlight and produce DC electric current, which charge the batteries via the charge controller. You then use an optional inverter to convert the DC charge (in the batteries) into usable AC charge for your appliances, such as lights or electronics. You may more-efficiently use current directly from your batteries without the use of an inverter; if you have DC powered appliances, lights, or electronics. Solar energy is quiet and has no moving parts, with the exception of a few small cooling fans inside of most inverters. Solar technologies have improved dramatically in the past decade, and have been adopted world wide; creating a market brimming with affordable and reliable equipment.

If you live in a part of the world with moderate to high levels of *insolation,* solar energy may be your best option to generate your own electricity. Insolation is simply the amount, in average hours per day, of solar radiation that your area receives during the year. Insulation may change throughout the year depending on weather factors, but the current daily average has been determined for all areas of the world [*]. Look up your area’s insolation number online, it ranges from 1 to 5 hours per year, in the US.

Quality solar technologies have the advantage of lasting a long time and, once installed, require a minimum amount of maintenance. Batteries may be the part requiring the most attention since there are a variety of types; some of which may be usable for only a few years, and others require some cleaning and maintenance.

You may be electrically self-sustainable using the wind as a source of electrical energy, if you live in an area with abundant wind. Wind turbines are used to harness the force of the wind and transform it to an electrical current using the turbine’s generator. The turbine is generally wired to a battery bank for it to provide charge to that bank. You, in turn, would use the battery bank to power DC loads, or use a DC-to-AC inverter so you can power common household equipment and lights. The generator may be a DC or AC generator, and may require additional components for it to work, such as charge controllers, disconnects, an inverter, etc.

Wind turbines need more skill and resources to install and maintain, because they have dangerous moving blades, a generator, and long spans of thick wire that must be carefully routed and connected to each component of the system. The turbine assembly must be erected over 30 feet, depending on size

of the turbine. Wind turbine installations may require a team of technicians and the use of a crane and other lift equipment. For larger wind turbines a crane is definitely required. Additionally, wind turbines will produce some noise, and will be highly visible by all in the surrounding area. Having a wind turbine, especially larger ones, may not be an option in dense cities, some towns, or areas where they are prohibited. Wind turbines may be used together with solar panels, and wired in a way that they both provide charge to the battery bank. A hybrid system, like this, has the advantage of keeping charge in the system in more-varied weather conditions, such as night time or cloudy conditions. Generally, the wind needs to be much more than just a breeze for wind turbines to produce significant charge. However, many areas of the US, and the world, have enough wind to produce moderate to good amount of electrical current [*][*].

You may be electrically self-sufficient by having a conventional fuel generator. Although this option is not encouraged by me, because you will be using costly and polluting fossil-fuels. But, if you can modify your lifestyle to use very little electricity; then this option may be more viable than to “fork-out” monthly cash to your electric utility. A fuel generator may be used as a back-up to provide supplemental charge to a small solar energy or wind turbine system. Additionally, you may perform most tasks that commonly use electricity, using other fuel-powered sources like wood furnaces, LPG tanks, etc. You may go to the extreme; where you don’t even require electricity to live a full and productive life.

Some wealthy people may think that to be energy self-sustainable, requires purchasing an expensive energy-producing system; to replace their energy source without changing their routine lifestyle. Such a goal usually requires excessively-large and powerful renewable energy systems, or remaining connected to the grid after installing it. The latter option is very popular in many areas of the US, because I believe it has been “allowed” by the utility grid industry; knowing it is mostly economically-unviable, and generally requires continued connection to the grid. This option of having, say, solar panels and a grid connection. Which generally require owners to have to pay for costly installations and equipment, a monthly solar energy power bill or loan bill, and in some instances a monthly remaining utility grid bill.

When people go with solar and the grid, one or more companies sell you and install the system, usually at a bloated price. The system may be purchased, but it is often leased or slowly-purchased using high-interests loans. Most customers accept large and painfully-expensive loans; of which a few “sales people” get hefty commissions. And, the solar energy system needs to be large-enough to produce more energy than what you use during the day, which is often not the case. Only then, may you “cancel” or “offset” your electric bill completely, and only pay for the solar energy used, or loan. But, if you produce less energy than what is used from your live grid connection; you will be paying “both” your utility electric company and the loan company! Clearly, I don’t recommend this option. Nor should you believe that you are self-sufficient if you choose this option. That is because you will rely on the electric company honoring your power-savings efforts, which often they don’t. And, you will also be saddled with a loan that is further entangling you to outside, often corrupt, financial entities.

Be telecommunications self-sustainable

You may decide to finally say goodbye to your telephone and cellular company, and only utilize your own “free-of-charge” communications equipment. You may communicate within your local area, across the country, or even internationally; completely free. When you are able to communicate in this way

and reliably, you are self-sustained in your communications. Again, communications, as defined here, are the combined services of telephone, cellular and land line; television, cable-TV, satellite-TV, internet services, streaming-TV, and cellular data, allow for the various forms of human communications. And, these together can add up to a monthly bill similar or greater than that of electric service, for a growing number of families and individuals. So, letting go of your communication costs not only can save you $1000s per year; but this can unleash technical savvy as you've never experienced before. Again, to be self-sustained, does not mean losing access or capability in your communications. In fact, you may gain access to people, places, and transmissions you did not have access-to before. You may also choose to let go of services and capabilities you didn't really need or want.

To be self-sustained in communications; you cannot pay someone for your access to communicate. If you do, you'd depend on that exchange and are beholden to the demands of that company or entity. Since you are a single individual 'customer', with no hopes of uniting with other customers; you have little to no voice in front of a huge multi-billion-dollar corporation. Because of this unbalanced relationship, what that communications corporation "says"; usually "goes". When was the last time you dictated, or even contributed, to the terms of a contract between you and your internet service provider? I thought so. So, leaving an abusive relationship, as established earlier, should be paramount.

Okay, you've decided to close all your communications accounts. You pick up the telephone and have no dial tone, your cellular phone has no calling or internet service, except for calling 911. And, your computer is not connected to the internet and cannot even take updates. Now what?! As I will detail in book 2, there are many other alternatives that are free and reliable.

Here in the US, your phone land line, cellular phone, or internet service may be re-instated, free of charge, with an FCC program called Lifeline. There may be similar programs in other countries or areas. You may choose to self-provide voice communications by entering the exciting world of radio frequency (RF) communications. There you can acquire various types of radio equipment that can reliably communicate from radio to radio locally, within your town, or even across state and national boundaries, all free of monthly charges. With some knowledge, you may get or build equipment that can tap into existing "open" wireless "Wi-Fi" internet networks; which you can then use for just about every other type of communication. For those living on the edge, there may be further opportunities to freely; including to communicate via satellite, of course, this requiring specialized equipment, skill and knowledge.

The free options are there, and they are many. They of course take work, knowledge, and some patience to set up, install, and use. They may require some initial financial investment from you, still being likely a fraction of the yearly cost of your current dues for communications. Some licensing requirements may have to be taken care-of; to fully operate amateur radio for RF communications. But these are relatively cheap and simple to get. Your knowledge in electronics, antennas, and RF; will surely expand as you setup and use these communication systems. Using long distance RF equipment, you may even communicate with people in other parts of the world free of charge! You may also send digital messages, through the air, using a computer and some specialized radios and equipment. Thankfully, there is already a network of antennas, repeaters, and satellites; set up for your use, again, free of charge. And, this network is growing every year.

So, being self-sustained in communications, does not mean you must go back to penning letters on paper. In fact, this decision may open up a pandora's box of knowledge and opportunities for you. Therefore, this is a great reason for living off the communications grid.

Be food self-sustainable

Think of the last time you were in an area with poor air quality, and immediately moved out to fresh air. Or, the last time you had no access to drinking water, and immediately corrected the situation. Likewise, providing your own food should be as basic and logical as ensuring there is free breathing air available and free drinking water at your disposal; at all times. And, like air and water, you depend on food to live. So, it is only natural to want to have complete and free control over your access to food. To be self-sustained for food; means to maintain unimpeded access to a variety of food sources to stay healthy.

As established earlier, life is a human right, eating enables life, therefore; food should not be denied to anyone, included those with little or no money. Following this logic, we can determine that most of us are at risk. And sadly; most of us living in modern societies, have been taught that "you must work, or starve". Nothing wrong with work, but it is animal-like to have it tied to a death sentence. "Work or die" is not a choice is it? Here work is an absolute obligation applicable to all.

We, as a world, have achieved a high level of productive abundance; enough to have food as a public service world wide. Something like public education and the mail; a tax-funded service. For example, most parents see it advantageous that their children go to public schools, while some chose private schools. And, when you buy a post stamp or pay your taxes, you get access to a world wide delivery apparatus; the postal service. However, food has been allowed to not only remain strictly private, but also become hyper expensive. As of this writing, inflation has caused food prices to "balloon" between 8-20%, in many areas of the US. [*][*].

The US population has been severely fragmented on their access to food. Many in the low-income population, with access to food-aid, have acceptable-to-good access to food. In fact, there is a similar percentage of US food aid recipients, 12.6%; as there are people living in poverty, 11.6%, in the US. [*][*]. So, it is reasonable to assume that most of those receiving food-aid are living under or just-above the poverty level. Another group, with relatively unimpeded access to food, are the wealthy. This minority group, families with incomes of over $113,000 per year, 40% of the US population; have the fortune to easily afford food. [*]. These two extreme groups keep food prices high in their own way. The poor often "grab, go, and waste" foods; reliant on the often-generous "food-aid". And the rich grab lots of food without looking at the price labels. Like this; the vast majority of the nation, the remaining 48%, pay inflated prices for most of their food. Needless to say that this group, the 48%, is feeling the sting of high food costs the most. I can tell that this group is painfully struggling with food costs, I dwelling among them. This group, only "getting-by", with careful budgeting, or sacrificing other needs and wants. And, while these apply to the US, much of the world experience food shortages and severely more "unequal" access to food. For example, in the Dominican Republic, per my experience, supermarket foods are only accessible to the tiny elite population of the big cities. While low quality, "colmado" foods, are often the only choice for vast majority of the population. There; fresh fruits, high quality meats, and food varieties are rare; while liquor, beer, sodas, and low-quality sweets are abundant.

Again, I am yet to learn of a food store that operates as a non-profit, of-course with exception of the rare food bank and charity-operation. So, depending on this mostly for-profit system, for 100% of your food intake; is ludicrous, especially if you are a low- to middle-income individual or family. If you happen to live in the US, right now, and be of low-income and have to pay for your food: heavens help you. You may be spending up to 30% of your hard-earned income. [*].

I believe having unimpeded access to food means growing or farming your own food. I do understand that modern economies have evolved to use money for food distribution. But, this has clearly allowed a large percentage of the world's population to be vulnerable, and abused due to food insecurity. So, clearly, modern economy has not worked for the vast majority. So, self sufficiency is worth a second look. In fact, I believe it to be the fix to the problem. I believe food farming is viable at the individual level, even in large communities and cities. Details on this concept will be developed in book 2. But let's introduce some details here.

In some rare instances you may have access to wild game, but here will focus on growing or farming food. To establish your food-growing operation you need access to some area with the ability to grow food. Land with arable soil, pots, space for growing plants, and an adequate climate. The climate can be natural or manufactured. Then, you need the plant resources: plants, seeds, fertilizers, knowledge, etc. It may be a small operation, which may satisfy a small percentage of your food needs. Or, it may be a large operation; potentially satisfying 100% of your "caloric" needs. Of course, the larger your operation the more resources, work, and time you will need to dedicate to it. I am quite aware that this is a reason; why most of us have relinquished our ability to generate food. And have surrendered our access to food sources over time.

I understand many of us would rather occupy our times doing things other than producing food; myself included. But, in the process we have allowed a predicament ripe for abuse from corporations, and subjugation by governments. After all, we must eat. Right? And, we have set up our lives to utterly depend on those, often corrupt, entities; to "provide us" with food for us to purchase. And, believe me, those entities will exploit your predicament. The "system" is geared-for and readily-encourages economic and social abuse.

Here I argue that: you may (1) produce a significant percentage of your food, (2) decrease the squeeze on the grip that the corporations and the government have on you; and (3) have time and energy to pursue many other things in life, like career, leisure, family, etc.

As will detail in Book 2, you may dedicate only a few hours of your day to food production, and maintain a steady supply of food; enough to save your $1000s per year. You may grow vegetables, fruits, and root-foods in a variety of settings and climates. You may even do some food-growing from a balcony of a high rise apartment garden! Farming animals for meat takes more resources and work than plant food growing. It takes more space, care, investment, and time. To grow small animals like chickens, ducks, and rabbits takes at least some yard space. These animals must be maintained: cleaned and fed. And, the animals must be maintained in a pleasant environment. For this you'll need to often control the temperature, ventilation, and lighting of cages, pens, or the corrals where animals are kept. These require a significant cost and effort. If you happen to own large open spaces like a country farm, the job does not necessarily get easier. Further, the farming of mid-sized animals, such as turkeys, pigs, and goats; takes considerably-more resources and time. That is why many towns and cities will not allow their farming. If you can own the space and resources for these, you must be prepared to spend a

considerable amount of your time and attention to the tasks of farming. But, you may be able to get or hire help, and may dedicate your day's work to this rewarding endeavor. You may grow and farm enough food to share or provide others with affordable high quality food; boosting your rewards. There may be permits and licensing requirements to farm certain foods or animals, or to sell food as a farmer. I'll leave it up to you to find your AHJ's requirements for growing and farming food as a business.

In general, you have the full right to grow and provide your own food as long as it is non-invasive, destructive, or harmful to human health and animal welfare. Many communities may "prohibit" food growing and farming, but this is constitutionally unbased, and it is against human and civil rights. As, you should have the "unalienable right" to life, health, and the pursuit of happiness. Many states and communities have established 'right to garden' laws which simply make it more plain that people, regardless of place, have the right to provide their own food. Only Illinois and Florida have passed these laws at the state level. But, on an individual basis, this "right" has been challenged in countless communities across the world. Especially rental properties. For example, the soil within your rental property is still considered part of the property that is "owned" by the "landlord". And, often these "lords" want to keep the land "intact" for concerns over "property value"; costs the "lord" may have to incur to remove plants and animal pens once the tenants move out; etc. So, in many cases, "owning" the land is highly desired to freely garden and grow your own food. In cases of rental properties, I highly recommend you politely persuade your land lord to "allow you" to have a grow garden or farm animals. In your persuasion efforts, you may remind them that it would make you happier and you may "consider" renewing your contract when it is due. You may also offer to have this stipulation added to your signed contract that you "will" remove the garden and any other farming devices and restore all areas used for these to its original state.. This may put your "lord" at ease and perhaps "allow" you to have your garden or farm.

In summary, freedom, and financial and food security benefits; are great reasons to be food self-sustained. But, reclaiming your right to access life-supporting resources is an even bigger reason. Even if you start to be food self-sustained in a limited capacity; this is a valuable "inch" of territory gained for your personal power and control over your life and your loved-ones. I encourage you to fight like hell, to gain what has been stolen from you over the years, literally, your right to live "free"!

Section 06

Increased Ingenuity and Creativity

Introduction

Being “off-the-grid” will incentivize you to think differently, think more, and think creatively; about the way you spend your time, resources, and energy. This is a great advantage, as with this, a lifestyle of rapid learning and development may arise. So, who knows what area of society you may advance or even invent? I believe that, as an off-gridder, you will likely cognitively-expand into territories that few around you have; putting you in the forefront of learning and creating. Perhaps in exciting new and useful fields such as energy, agriculture, communications and computers. The benefits of living-off-the grid may unlock potential, in these and countless other fields, because of your decreased reliance on employment; increased time available; and newly-learned skills. Thinking efficiently enables you to be not only more efficient, but you may generate more with less; including works, money, and ideas.

You will be encouraged to think creatively. I wrote ‘encouraged’ and not ‘forced’, as many in the field express; because living-off-the-grid in most modern societies, is a voluntary endeavor. The Grid, in most instances, is just a phone call or a few clicks away. And it is so natural to become part of a paid grid-connection; that the opposite, “not being part of the grid”, is what’s difficult. However, once you plunge into this “lifestyle” and “disconnect” from your utility services; you hopefully will be ready, with systems in-place; to allow you to live happily, safely, and productively. I did not say “replace” the grid. This is because significant adjustments are required, and replacing the grid with a similar system is just wasteful and unnecessary. As in your off-grid endeavors you may be attempting to get away from the glare, noise, and stresses of the grid. Instead, if well prepared, you will be transferring all your “systems” to what I call “real life testing”. This will require your full attention and ingenuity to maintain and steadily improve. Otherwise, if you are not fully-prepared before you disconnect, this will require not only extra ingenuity, but also some failures and suffering to deal with. In either case, you will likely use lots of both; ingenuity and creativity, before, during and after disconnecting from the grid.

As alluded-to here so far, living-off-the grid takes knowledge, skills, and technologies that you may not have, may need to attain, or may need to develop further. And, if you are the average world citizen; your time, financial, and material resources are limited, requiring further creativity and ingenuity to manage. Although creativity and ingenuity are terms often used interchangeably, here I separate them by my own meaning of the words. Here, “creativity” will take more of the artistic, aesthetic, innovative, spontaneous, trying; thought and manual resourcefulness. Looking at the world through an “improvising lense”. While “ingenuity” will take the more technical, methodical, calculating, theoretical, and exacting sense of the word.

I believe just thinking about getting-off-the grid kicks the wheels of creativity turning in your brain. The very idea of being smartly-independent in a significant way can be liberating and exhilarating. I believe this is such an awesome prospect, especially if it is adopted by a growing number of people around the world. Just thinking of the positive consequences, and impact on many areas of society, like drastically-reduced energy consumption worldwide; may give you goosebumps. The consequences could involve nothing less than a revolutionary shift toward the improvement of the world’s environment, health, social fabric, among others. It would put us on a path of greater productivity and happiness, and it would mark the beginning of the fall of many polluting industries. These and other potential goods that

you and others may be unleashing, will likely fuel your motivation and creativity, and keep you going throughout your difficult endeavors. I believe, as an off-gridder, you will become more-creative; to solve the many problems that will arise, before, during, and after you disconnect from the grid.

I believe creativity will make even your most daunting challenges solvable. For example, you may live in an extremely cold area, and you may not be sure how you will have heat if you disconnect from your power or gas utility. But, thinking about the problem should cause you to search for answers; from others, on the internet, your library. You may find answers in nature, through your prayers, in your meditations. For example, you may ask yourself: how do birds deal with the cold weather? So, you may decide to find more about different types of insulation, low energy types of heating technologies, and different types of housing configuration and design that allow for better heating. You may find out that body heat is adequate for your comfort, and preserving it better may save you large amounts of other heating energy. Also, you may find yourself constructing or installing rare, customized, and unique structures and mechanisms, to facilitate things that are not available when you are not connected to the grid. For example, water collection and pumping systems; photovoltaic array structures; and septic tanks; just to name a few. You may build a motor control circuit for your high-efficiency DC air conditioner, or build yourself a non-electric food cooler using ancient plans.

You can get creative in so many different ways when you have “off-grid” as inspiration. For example, through my off-grid endeavors, I began to think about custom homes that are built more efficiently for off-grid systems. And, the result is a radically different type of home, that looks and operates vastly different from the conventional “matchbox” home. I call them matchboxes because they are all rectangular, filled with sticks, and can light up like a Christmas tree in the event of a fire. But, jokes aside, off-grid thinking has taken my creative thinking to a variety of areas of specialty, and I am sure it can do the same for many others.

Off-grid thinking and endeavors will surely engage you in unique ideas, experimentation, planning, and building. It has launched me, in just a few years, from knowing very little about electricity, mechanics, design, computers, and electronics; to training, working, and earning money in those fields. I have thought about, sketched, designed, and built many structures and mechanisms that have contributed to my current off-grid level. Those efforts may surely further enable others with more resources. I am convinced off-grid thinking can unleash a menagerie of ingenious ideas in anyone with comparable passion. Many can turn these ideas into plans, and many may turn those plans into viable finished products. I’m talking about new or perhaps never tried technologies. For example, you may develop an extremely-efficient way to heat the air in a room using low voltage; or build the next generation of quiet and efficient wind turbines that is cheap and relatively easy to build. You may become an engineer in your own way, or you may advance knowledge, in a certain field, so efficiently; that you become a recognized inventor.

Ingenuity will surely take infinite and unpredictable directions with all individuals involved, the larger issue, I believe; is getting the people involved in this type of thinking. You see, when you are herded by the “middle people” of the grid, into a certain lifestyle of just paying for everything; then I believe, ingenuity becomes dormant. Getting yourself into “trouble”, by trying daring new approaches to things, I believe turns the wheel of ingenuity in your brain. I believe “trouble” often spawns clever solutions. So, what more “trouble” than the many inconveniences brought upon you by going against the grid-connected lifestyle? There won’t just be an “easy” button for you to press, for example, each time you

need food, water, or comfort. That easy button is likely your wallet. In an off-grid lifestyle, you will have to provide those independently, reliably, without money, and indefinitely. This won't be easy at first, and it will take much ingenuity to accomplish.

Having said all this, you need not "reinvent the wheel" in every step you take. Mostly, you will use ingenuity to improve or customize existing knowledge or technology. For example, you should not build a solar module using cells, if there are already many cheap solar modules in the market; even free. Unless, you have discovered a much more efficient cell, or a cheaper way to put one together. Make no mistake, advancing tech will require tremendous skill and knowledge, but some may possess them. Also, you may attempt to improve on solar cell efficiency by building a simple and affordable solar tracker system. Something that is currently complex and costly. For example, I have thought about this problem, and perhaps a wooden structure, a simple electronic circuit, and a few motors may do the trick.

Ingenuity will likely be often optional, and require extra efforts that may not often yield good or any results. But, this is okay, because even if an invention or improvement fails, it is a step forward if well documented. So, I would ensure to record your ingenious efforts, and share them, regardless of success; because it is often what doesn't work that can reveal what does work!

There are many areas of off grid-living that need ingenious minds and contributions. Especially contributions to low-cost, accessible materials, parts and high-efficiency technologies. Most people that "need" to be off-grid, are the poor. So, for them to advance economically they "need" to be off-the grid, or at least have low-cost energy. This is difficult to achieve, and rare to come across, especially for reliable systems. So, development in that area is needed. Another example, is that, materials such as metals are generally costly, and their manufactured components require complex and expensive factories. These and other factories make inverters, generators, and air conditioners; largely expensive. But, economies of scale (abundance manufacturing) have made many of these finished products low cost or even when discarded. Also, 'cannibalizing' parts from grid-tied, to build off-grid technologies, are possible alternatives to high cost items. Furthermore, through ingenuity, alternative materials may be developed to replace conventional ones. These may offer comparable or the same benefits. Contributions to technologies that are more economically-accessible and reliable are to be welcomed by much of the world.

Contributions to efficiency are always important for off-grid living. Efficiency can save money, time, and make off-grid living possible for many low-resource people. Technologies, methods, and environments can use efficiency advancements. Technologies such as air conditioners, battery-operated vehicles, and others; can be operated more-cheaply and longer when they are more efficient. If efficiency comes at a low-cost, the benefits "double", as they become more-efficient "and" available to more people. Ingenuity can enable anyone, with the means and opportunity; to enhance technologies with efficiency. Methods can also be improved and become more efficient. For example, running energy-demanding equipment during the most energy-abundant part of the day, is an efficient method to use the energy. For example solar energy stored in a battery bank. But, be aware that energy companies charge more during high energy demand hours.

Automating efficient methods is also a way to be more efficient. For example, electric vehicle charging could be set to automatically occur during the least-expensive energy rate hours of the day. For grid-tied systems this would generally be in the midnight hours, and for off-grid it would be during the most energy abundant part of the day, or midday.

Experimentation and testing are important tasks that many off-gridders engage-in. You may experiment with technologies you may have developed or improved to see if it works, and see if it is useful in "real life". By real life I mean under normal conditions, not highly-controlled conditions as those in a test lab. You may experiment with unique and innovative combinations of parts or configurations of equipment, technologies, and methods. You may get more efficiency, or more utility, from equipment this way. At times much more. Or, you may be attempting to build a new technology that requires both experimenting and testing; throughout its design phases. You may even be able to come up with a revolutionary discovery, one that may change the off-grid landscape completely!

Testing is very important for existing and improved technologies. It allows "real world" data to be generated under various "use conditions", many of which are unique. This data may be valuable for you, others, and even for the manufacturers of the products being tested. For example, the speed at which DC to AC inverters are manufactured throughout the world; begging for real world test results. As these are often tested in controlled lab environments and lack data from various user scenarios. For example, you may test the technology in a very hot and humid location, such as inside of a boiler room, and share the performance data with other users and the manufacturer. You may share such user test data online, through popular feedback reviews, blogs, videos, or audio podcasts. Testing may also help you quickly determine if a piece of equipment will work for what you need it for. If you fail to put that equipment through a series of tests, similar to what you will be doing later on, you may find that the equipment fails or under-performs. Then, it may be too late, or inconvenient, to get a refund or replacement from the seller. This very scenario occurred to me years ago with a rather expensive large inverter. Upon receiving it, I assumed it was "good" and stored it for many months. Later to find it faulty, when I installed it for use, it ended up being useless. By that time, return options were not available, and repair options were not worth the cost. I ended up selling the product "for parts", at a fraction of its original cost.

While off grid, your technical and scientific knowledge is surely to flourish, so are many other types of knowledge. In many instances, during your efforts, you will surely be required to understand concepts in many areas of technology and science, such as electricity, computers, physics, chemistry, hydraulics, biology, botany, mechanics, and more. Electrical knowledge will be critical because this is perhaps the most noticeable change in your off-grid lifestyle. Once you "pull the utility plug", you're disconnecting an entire industry that was working day and night to keep hundreds of amperes at your disposal. When "that" goes, you are left with whatever amount of energy you can produce, and only for as long as your storage (battery) bank can dispense it. You will likely, and are highly encouraged, to install, maintain, and use your off-grid electrical system yourself. Since straying away from self-installation and operation can be prohibitively costly. And, this way you are truly "in charge" and self-sufficient. For these to occur; you will need to understand system components and how electricity works. For safety, understanding electrical flow cannot be understated.

Most off-grid electrical systems generate AC current that is lethal. Death or serious injury, may come from electrical shocks or fires, caused by sudden discharge of current. Also, electrical arcs may occur, where a violent electrical explosion may cause serious bodily harm. Electrical knowledge will also be required to improve and maintain the reliability of an off-grid electrical system. I recommend you become knowledgeable on basic electricity, before going off-the-grid, if you plan to have electricity. This knowledge will give you an appreciation for its dangers, and ensure you remain safe. And, it will give you satisfaction and pride in your efforts. Electrical knowledge may be expanded to the point that you

become an expert in the field, and perhaps work as an electrical worker, electrician, or electronics equipment repair person. Then, you may build innovative circuits that are useful, customized, and unique; even “ground-breaking”! As it’s been said: “knowledge is power”, and the more you know about a subject, the more options you have with it.

You may learn or expand your knowledge in computers and programming. Automation is an exciting aspect of off-grid living and its systems. And, computers enable automation best! You may automate many things using integrated circuits, through computers and programming, such as lighting, solar trackers, door systems, water heater switching, etc. You may be able to track your wind or solar electricity generation and use it through a computer application. And, you may develop applications to calculate and monitor battery storage, wind turbine size, and solar array size needs; for a particular home or load.

Your knowledge of physics will enhance and expand your capability to do more, and do better with off-grid technologies. You may be able to save time and effort going after seemingly-impossible feats, like the elusive “perpetual motion” generators and ‘black box’ technologies. The internet is littered with claims of “mysterious power machines” and “free energy devices”. Although I warn you against these fantastical pursuits; knowledge of physics can ground you into exhaustively-established scientific principles, and perhaps allow you to improve and invent technologies and mechanisms that work. For example, you may build a sound structure as an efficient home for living, using physical principles like the use of the arc, and fluid convection. You may incorporate fluid heat exchange principles into an inverter to optimize its performance. You may bring alive an ancient refrigeration technology and save $100s per year on refrigeration costs. You may, with ease, make measurements of optimal angles for your solar array, or determine your neighborhood’s visibility for your 40-foot-high wind turbine mast; all thanks to physical principles. Relatively basic mathematics may be required for many of the physical and electrical principals encountered in off-grid fields of knowledge, but a middle-school education and above should suffice for most people.

Chemistry is very useful knowledge when dealing with battery systems. Lead acid, nickel iron, and lithium ion batteries; all rely on chemical reactions to operate. If you understand these chemical reactions, even on a basic level, you are likely to effectively maintain and optimally-use these batteries, with cost effectiveness. For example, if you understand the limitations of lead acid batteries, and your load or applications are ‘low drain’, consisting of a few lights and solid state devices; then lead acid batteries will do fine. With deeper knowledge, you may be able to refurbish old lead acid or nickel iron batteries, and reuse otherwise throw-away assets. And, if you become an expert, then you’d be capable of building battery systems from available raw and finished materials, and working in this growing field. Chemistry may even help you replace your electric air heater or cooking range; with butane or wood chip furnaces. Understanding the relationship of the elements of heat and fire are essential in improving and inventing heat-exchange devices for many different uses.

Further, knowledge in hydraulics may enable you to wisely choose, use, and maintain different pump systems. For water distribution, water filtering, and automation. You may be able to improve on existing water pumps with your hydraulics knowledge. Or, build your own automated irrigation system for a garden. Hydraulic principles apply to gravity powered water systems, where no pump is needed! This concept has been used in aqueducts and water distribution systems, throughout the world, since ancient times! For example, you may be able to cheaply and efficiently channel water into your home

from natural water reservoirs like ponds, lakes, rivers, and ground water; using simple and cost-effective hydraulic principles and technologies.

Also, knowledge in biology is important when you are off-the-grid for your food sources. Farming animals humanely and efficiently requires knowledge of biology, in the fields of animal welfare, human health, animal biology, among others. Plants are live organisms that need understanding too. Knowledge in botany will enable you to economically grow, maintain, and consume quality and dependable plant foods. And, keeping abreast with plant needs, diseases, and harmful pests; will enable you to be a more productive planter.

Mechanics, as a science, is everywhere. If you basically know about it, it will help you make better choices and improve on available structures, technologies, and concepts used to live off-grid. If you become specialized in mechanics, you may improve technologies and incorporate them into a system for a variety of off-grid uses. You may invent new technologies or systems that may facilitate or enable people to live better lives off-the-grid. For example, you may create lighter customized bicycles for transportation, cargo, and working. Many people around the world depend on them, and there is a considerable demand for all types of bicycles. Or, you may invent a lifting mechanism from existing parts, or cheaply sourced parts, that may enable loading and unloading of heavy items at low cost. For example, I currently work as a multi-purpose technician, and I often install large heavy monitors on the walls of classrooms. A compact light-weight mechanical device, that helps me install these without help from a second worker, would be extremely helpful.

Multiple fields of knowledge are often used in countless modern technologies. Electricity, mechanics, and hydraulics often come together in automated systems of all kinds. If you add computers to these; then you approach the field of robotics. Some off-gridders may delve into this exciting field, after becoming knowledgeable and skilled in these various fields. Robotics may help off-gridders in further automating tasks, for their everyday life or work, that may also earn a significant income. Knowledge and skill in robotics will surely generate demand from generously compensated positions and contracts, which may be used to expand your off-grid endeavors and introduce them to different industries.

Clearly, expanded technical and scientific knowledge will help you in your endeavors before disconnecting from the grid, and while off the grid; and may help you enhance your income potential too. Even plainly theoretical knowledge of these fields, will enhance your experience with your off-grid endeavors; giving value to the many tasks and technologies encountered while off-the-grid. And, most powerfully, is the potential of sharing much of your learned knowledge with an audience that in turn may take some of that knowledge and “run” with it!

Section 07

Promote Peace and Freedom

Introduction

Among the greatest gifts of the off-grid lifestyle are the greater peace and freedoms attained by participants. As an off-gridder during my youth, and a partial off-gridder now, I can attest to the increased peace and freedom experienced when you 'disconnect'. Peace replaces 'worry' for 'fair responsibility', and allows a harmonious and joyful life even if it is fast-paced and busy. There, freedom is demanded and gained, by the off-grid individual, while understanding that others diligently work to take it away. I believe this occurs naturally, because of the way the system is artificially arranged. The off-grid lifestyle empowers you with knowledge, skills, and resources; so you can gain your freedom and keep it.

Peace is the harmonious, natural, calm, focused and synchronized lifestyle, that minimizes stress, noise, and sickness in your life. Peace leads to greater health, and this is among the most important gifts you may have as a human being. To be reminded of the importance of health, just recall the last time you were unable to function normally; due to a bad headache, a virus, or a disabling injury. I recently contracted covid-19, luckily, with mild symptoms; and suddenly I put health back on its pedestal. If you're healthy, I can assure you that you don't want to get sick. At times severe headaches can suddenly stop you on your tracks, if you suffer from them, and rudely remind you of how precious health is.

The stresses of the "rat race", especially in large cities or industrialized environments, will likely cause reactions that can affect your health. Few of us counter-back stress, in our high stress lifestyles, and we are even taught to increase stress levels to "prove our worth as producers" at work or in society at large. For example, I worked at a fuel station maintenance company in South Florida many years ago, and there was clearly a culture of wasted resources and a competition of bodily endurance among the workers. There, the longer days you worked, and the more consecutive days without sleep working on-call; it seemed, you were valued more as an employee. And I have encountered similar cultures in many other employment places, here in America.

There are clear and established correlations between high stress, low health, and early death. [*][*]. And, as many underestimate, mental health is affected by stress too. Perhaps more than bodily health. As a more-armed and lethal public, especially here in the US, mental health is more critical than ever. With alarming and increasing rates of murder and suicide, mental health is "at the center of the storm"; on these matters. With much reason, a peaceful and less-stressful lifestyle is sorely needed. I believe the many benefits of off-grid living; culminate in this more-peaceful, health-promoting lifestyle.

Although it may seem counter intuitive; how you may be more peaceful when you "have to" engage in seemingly "more work". After all, in an off-grid lifestyle, you would be taking a lot of automated systems "off line", and "handling" them yourself, right? However, despite this and other facts, I still believe this lifestyle promotes peace in your life and the world around you. Even under increased activity. This is happens by: (1) getting out of debt; (2) engaging in more-meaningful work; (3) doing more with less and feeling less 'need' to earn more income; (3) allowing more time for yourself and loved ones; (4) improving your diet; (5) improving your learning; (6) engaging in more-meaningful and leisure experiences. So, let me develop some of these reasons.

Peace, as defined here, is not doing less or remaining silent or calm. Although those may help, my "peace" is the lack of worry; or at least highly "minimized" worry. Less worries about debts, promises, commitments, and bets. The off-grid lifestyle reminds you to stay away from those that "require" you to get into unreasonable and harmful compacts. And, the off-grid lifestyle allows you to begin undoing the "knots of harmful decisions"; you may have tied over the years.

In light of an off-grid lifestyle, I define freedom as the ability to do more of what you want to do, and have less unreasonable and harmful restrictions imposed on you by your peers, government, and corporations. There are many types of freedom that may become a reality through living off-the-grid. You may become financially free; socially free; and even physically free. Your movements and time may become more available and democratic. By "democratic" I mean having more power to choose. Especially, choices that you should be free to make or not make. And have more choices, instead of singular, or few similar ones. Having freedom to choose also involves having "real choices". By "real" I mean that choices are between two or more viable and different alternatives; not being given a "good choice" and another that no-one would want. For example; work for money or suffer dearly.

Promote personal peace

Broadly speaking, I find there are two types of peace, personal and inter-personal. And, the opposite of peace can be conflict, war, chaos, suffering, violence, etc. You may have peace within you, with yourself, in your life; this is personal peace. You may also have peace with others, your neighbor, your community, other communities, other nations, etc.; this I call inter-personal peace. I believe that, to achieve both types of peace, you must start gaining peace within you first, then in your immediate space. I strongly believe, living off-grid allows you to begin claiming and securing your personal peace by turning stuff "off". Turn off the noise, excessive lights, economic pressures, and toxic social pressure.

Turn off the noise

Our modern societies are deafening with noise! I believe we evolved our hearing to help with our survival; to detect sounds and look for "threats" in those sounds. There are noises everywhere in our cities, towns, and even our homes and bedrooms. Each sound affects our stress, even if just a little, accumulating to cause perhaps significant stress during each day. Jack hammers, vehicle sirens, and air conditioning equipment; for example, all emit noises that we hear and likely get affected-by. Our hearing is powerful, and in a quiet environment, we may hear sounds miles away. We may even hear our own hearts beat during quiet hours of our days. Living off-the-grid may allow you to turn off some of these stressing sounds; in your immediate living space. Your air conditioner is perhaps the most noticeable sound; coming on and off intermittently. These humming and thumping sounds may interrupt moments of serene silence, concentration, or meditation. And, I believe, they introduce an artificial, machine-like feeling, to your existence. Additionally, cell phone calls and messages, alarm chimes from devices, equipment cooling fans, televisions, and more; all add distracting and stressing noises to your personal space. Especially when these items are on constantly, during your woke and sleeping hours, like your cellphone.

Some people are known to turn on their television sets when they rise in the morning and keep it on throughout the day, then go to sleep watching it. The same may occur with cellphones. Many people

leave their cellphone videos, or TV on “play” mode, even during sleep. For example, on YouTube, there are many 8-hour long videos “to help you sleep”; amazingly stupid! Many of us have become “extensions” of our electronic devices, like smart phones, laptop computers, and television sets. I have witnessed folks that cannot walk a few steps without looking at their smart phone screen. I’ve even seen folks cross the road, walk around busy areas, and drive a vehicle; all while staring intently at their smart phone screen. It seems that everywhere I go, I see people facing their cellphone, thumb raised ready to tap. And, that remains their default body posture for as long as I study them, and surely long after they leave my studious gaze.

I was a victim of many of these abhorrent habits until just recently. Then, I wanted to fill every minute of my day with what I considered “learning” and “entertainment”; with multiple devices. I call this “screen hopping”, where you switch from device screen to device screen throughout your entire day. It really is a phenomenon occurring at an alarming regularity. Try to notice it yourself!

When you live off-the-grid, on a limited budget, as most people will; you must begin to look for “opportunities” to save resources. Especially energy! As you will only power your electronics and appliances with the limited charge in your batteries, or the costly gas you may have in your obnoxious generator. So, your time to have your television and devices “on”; should be severely curtailed when you live off-grid. Plus, your time to have your air conditioner “on”, for cooling or heating, may be even more curtailed; as these generally take much-more energy to run. Thus, all the noise these things generate are limited, and sometimes eliminated. You may find alternatives to your air conditioner, and even your ‘smart’ devices or television. You may choose to open up windows and enjoy the fresh breeze instead of your air conditioner. Or, you may opt to read from paper, or an electronic ink device.

Choices based on efficiency will likely minimize the noises in your space or home, and will surely minimize the time that any noise may be on. And, you may experience periods of serene silence that can help you begin to calm down and synchronize many aspects of your mind and body. With less noise, you will surely: sleep more restfully and deeply; breathe more regularly and deeply; improve your heart functions and circulation; maintain a healthier body posture; gain more focus and insight; among many more benefits. Even when off grid, you may still hear and experience noise from outside of your space or home; but those are often beyond your control depending on your location or place of living. But, you may learn to cope with those distant noises a lot better than those close to you. And, there are many methods to minimize outside noise too. Insulation, barriers, and isolation are a few solutions for limiting or blocking outside noise. With more details coming in Book 2 of this text; insulation are sound absorbing materials that can be installed in walls, ceilings, and floors; to minimize outside noise. Additionally, barriers, physical structures erected between you and a source of noise, can be constructed of sound absorbing or sound deflecting shape and materials. And, they can be strategically placed between you and noise. Finally, isolation is just putting some distance between you and sources of noise. For example, If your neighbor has a noisy machine shop just a few meters from your space; as a last resort you may consider moving “away” from there, and into a less noisy place. But, isolation has many disadvantages you may want to consider too.

Turn off those lights

Too much light causes discomfort, heat, and stress. I argue that we have evolved over the millennia to be healthier and happier under limited light conditions. Depending on our global position, a day’s sunlight hours may last from 6 to 12 hours. This is the time period when our bodies are naturally more-

active, and when most of us do most of our daily tasks. With artificial lighting; we've extended our 'active' hours during the day. And, we have pushed our bodies to 'go' for much longer than in most of our past; as a species. This "push" has been increasingly going-on; probably since the discovery of fire, but especially so since the invention of artificial light. Artificial light has enabled many comforts and safety around our homes, in places of work, in our hospitals, cities, and more. But, it too has "robbed-us" of much needed quality rest, darkness, and our natural visual cycles.

Sleep is definitely and negatively impacted by artificial light. [*]. The quality of our sleep is especially affected; thus the reason why most health experts recommend people "not" watch a bright screen in the last hours of your day. This advice is routinely ignored by, perhaps, most people in the world. Many peoples' sleeping time is often shortened by sports games, movies, and other shows shown on television, during "prime" hours. By prime meaning the time when most working people are at home, from 5pm to 9pm. Additionally, screened devices are replacing and increasing the time we "watch" content. Many of us wake up early to work in the morning hours, often at 5 or 6 AM. And, many of us watch television, or other screens, from day break to well past 9PM. In fact, on average, Americans watch about 2.5 hours of television per day, and this average increases with age of the viewer. [*]. In fact, Americans were found to watch TV the most between 7PM and 10PM, and nearly 37% stayed up late until 11PM watching TV. [*]. At times, I have experience going to sleep without watching any television before bed; and the improvement to my sleep quality was stunning. The off-grid lifestyle necessitates the saving of energy and minimizing the use of artificial lights, televisions, or any energy-using devices during night time hours. Especially if you depend on solar energy, using energy frivolously, during non-sun light hours, is wasteful. For example, I have my internet and TV equipment running on solar batteries at the moment. And, they can only run for a few hours per day, so I have to ration my internet and screen time. Even more energy rationing is needed on cloudy days, as my system depends on solar light to recharge. An efficient and health-oriented mentality mandates to keep artificial equipment "off" during hours of darkness. This not only "maximizes" peaceful and natural quality rest, but also allows for your body's natural cycles to return.

You may have experienced the daily "gloom" some time in your life. If you've been lucky to have spent extended time in remote or non-industrialized locations; you've likely experienced it often. The gloom is the evening hours of the day transitioning from daylight to darkness. I've experienced this period as one of peace and reflection, and where I visually transfer to a "night time mode". A period of needed pause and tranquility that I believe comes naturally. I've also noticed that interrupting this period with artificial light, noise, or needless activity interrupts this natural transition, and denies you certain health and spiritual benefits. You may "recover" from interrupting that transition, but you may feel, as I certainly have, that you need it. I believe the body's many natural cycles, that often get interrupted by the stressors of modern society, cause harm to us. And, however minute each one is; they likely accumulate.

These visually-driven transitions are also called circadian rhythms, and are essential for health and well-being. I believe the body is evolved to detect this visual gradient during the day, and prepare for different stages in your body functions depending on these visual cues. The flashing of our television or device screens, and the sudden turning of a bright light in a room, surely disrupts these cues, and your brain may throw your body into confused modes. Again, when living a highly efficient off-grid lifestyle, it is wise to allow the day-light to come and go naturally. And it is wise to limit artificial light to sparingly short periods only during the daylight hours. I believe you do not need any artificial light during most days, if you plan your day accordingly. And if you live in an area with abundant sunlight, this is even

more true. This practice would be optimal for both your body and the efficiency of your electricity supply.

Turn off economic pressures

Living off-the-grid, in the way I prescribe here, saves you money! Some so-called off-gridders have only "transferred" all of their high consumption and inefficient lifestyle, from fossil-fuel sources to massive alternative energy sources. So to keep their lavish lifestyle using renewables. This is not my goal here! My goals are, generally: to save energy, cut waste, switch to greener and cheaper alternatives, and save money! And, not only do I advocate saving money needlessly. I advocate "needing less" of your money. When you are more-efficient, on multiple fronts, you become less-dependent on the economy; thus less dependent on money. By extension, if you need less money, you don't need to "chase after it" as much. Also, by lessening your bills, and in many instances turning them "off" altogether; you lessen the "economic pressure" on you. Economic pressure is real and it causes considerable stress! I estimate that the inability to "pay" for goods and services is among the most stressful factors for most working independent people; throughout the industrial world. Again, I believe we are 'taught' to pay for just about everything; by the time we become working adults. This, naturally, makes "making money" to pay for all, a major priority for most of us.

For many, economic concerns are so stressful that their health is severely affected. It has been found that higher average income seems to correlate with better health. [*]. So, it is reasonable to accept, and data shows, that poverty is a major cause of low health. But, I believe, "the lack of money" is not what causes less health, but is the lack of access to healthcare, healthy lifestyles, as well as the higher stress that these bring. So, when you need less-money; you can work less, and invest time more in yourself and your loved ones. More time to eat well, exercise, and engage in healthier activities. Also, these investments may pay-out in the form of higher-knowledge and specialty skills. All of which may bring you more income, or further lessen your 'need' for income. These possibly may result in a "convergence of benefits", all of which improve your health.

As I have alluded-to before, when you can provide for your own water, food, communication, and energy needs, freely; there is not so much else that you "need" to pay-for. Ideally, perhaps, the only remaining major financial 'responsibilities' that remain are shelter and transportation. And, for working off-grid adults, with a growing set of skills, these may be a fraction of what most other people have to "worry" about. Of course, I understand ideal situations, such as these, are not always attainable or practical. But even minimally-lowering debt, bills, and other financial obligations can go a long way impacting your well-being.

In summary, the lessened stress from economic pressures, and the increased time for personal growth and leisure are two huge factors of benefit here. So, I believe, gradually or abruptly; turning off your economic pressures while living efficiently, will surely help you live a more peaceful, healthier and happier life.

Turn off social pressures

Some peers may cherish you, and help you achieve much in your life. But others may cause you ill with their unwanted pressure. I believe the more peers you come across, more of them are likely to pressure you into ill decisions. Ill decisions and actions, with short or long term effects, may carry

disadvantageous or harmful consequences. For example, the adage: “keeping up with the Joneses”, reminds us of a popular tendency to want to emulate what others do, with little regard to its reasonableness. Many of our actions are driven by what “peers will think of us”, or what “peers will see about us”. I believe many of these “peer-driven actions” are done subconsciously. And many of us are so accustomed to operating under this peer-driven pressure that we hardly realize it. Although some of our peer-driven actions may be justifiable and even reasonable; I believe many of us become addicted to that “peer approval”, and take increasingly-less reasonable actions. These actions may saddle us with unnecessary debt; cost great strain in our family life; or cause us to believe we “need” to earn more money. I believe that greed and materialism are, in part, products of peer-pressure. And, wanting ever-increasing wealth, property, and luxury have become identifying traits in the lives of most city dwellers. These “soul-rotting” traits have become rampant and epidemic-like behaviors; that are taught from old to young in a vicious cycle. And, greed and materialism cause waste, it’s just inevitable and opposite from an off-grid lifestyle. The luxury life is one of unnecessary and selfish uses of space, resources, time, labor, and more. Again, the antithesis of efficient living.

The modern phenomena of the explosive use of social media has supercharged toxic peer pressure. In fact, an increasing body of studies are finding that social media negatively affects many people's behavior, self-image, and mental health. [*][*][*]. Of course, these effects are dependent on amount of use, age, other underlying problems, and other factors. But, problems reported by the peer pressure coming from social media, are undeniable and many; including bullying, hate-filled content, discrimination, and exposure to violent material. And, social media is not free, it is a propaganda and advertising machine, feeding on a near-constant stream of divisive and triggering content. Furthermore, social media has been known to constantly broadcast, amplify, and pump-up the highly artificial and manicured “celebrities”. These popular idols often showcase the lifestyle of largesse and luxury, often accompanied by “enviable” looks and fitness. All while hiding all their negativity, creating a facade of near perfection; which harms most of us with “less perfect” lives. In other words, the harm comes from the assured failure of us to reach the unattainable level of “happiness” of these “idols”. And, these constant streams of fantasy, cumulatively fuel the many ill decisions and behaviors of our increasingly ‘connected’ society.

Living efficiently mandates making calculated and reasonable decisions. These are difficult to make if you live in a world of fluff. These sound and grounded decisions will likely improve our lives gradually. And, these can be enhanced by peers, but only if these peers are thinking clearly and efficiently as well. For example, you may not get a reasonable answer if you ask a fabulously-wealthy person: how to need less money by down-sizing? This wealthy individual likely has no frame of reference on the concepts of “needing-less money” or “down-sizing”. They are likely to “glitch-out” if asked such a question. Since they likely have spent most of their working lives spending massive amounts of excess energy, trying to make ever-more money, and would likely want to make more money to up-size! So, to them, the question is just absurd, if it even registers. They are likely unaware that most of the world’s population lives under some level of poverty.

So, your decisions must be based on broad calculations, learned experience, and perhaps, other reasonable people’s experiences. I do understand that informed decisions are best. And a variety of information produces better decisions. So, minimizing toxic peer pressure may be advantageous, in most instances, where reasonable and quality decisions must be made.

Peer pressure is not to be confused with peer input. Again, the un-pressured and honest input from many peers may improve a decision; if these inputs are honest and unbiased; limited in scope to your concern; and given by a large number of peers. For example, polls and surveys are a sort of peer input. The data collected by these polls are extremely valuable to find answers to certain questions. These are at times gathered from averages. There is a phenomenon that the average, in a large and randomly selected collection of inputs, may provide relatively accurate and useful predictions on countless questions or problems. The “bell curve” is a representation of this random collection of inputs. However, be aware that peers rarely provide random and or unbiased inputs. They may be swayed by the same corrupted information consumed in social media and other poor sources.

Living off the grid includes living mostly off the grasp of toxic social media. I personally have, years ago, unraveled my ‘dependance’ on social media and rarely use it. I must admit I routinely use a popular video sharing platform which is ‘sort-of’ a social media platform, but I keep interactions with viewers at a minimum. The same with Facebook and other social media sites. I keep a very limited use. The problem with social media is the personal disconnection of users, and its ability to present a facade of each user. Even when you know them personally; the lack of compassion, care and tolerance is very apparent. And, people feel emboldened, entitled, and incentivized to say, show, and share things that are exaggerated, untrue, offensive, divisive, or shocking. I wrote ‘incentivized’ because social platforms have been found to ‘amplify’ content that angers, enrages, shocks, saddens, disturbs, etc. [*]. That is their “bread and butter”. That is because hate-filled and anger-triggering content are the ones that are more-readily shared; thus providing more views and clicks for the platform. In turn, those provide more advertising dollars to the social media companies. The user also feels that she or he “benefits” from posting ‘outrageous’ content, by getting more popular and increasing their “likes” or “responses” from others. Thus more and more outrageous content is posted, for an increasingly desensitized audience. It is like “a race to the bottom”, with people posting things ranging from nonsensical conspiracies to blatantly dangerous lies. Social media “dis-information” was just recently in the public discourse with widespread use of political manipulation in the 2016 and 2020 US presidential campaigns. [*], and the spread of dis-information and “kook” conspiracies about the Covid-19 pandemic, the war in Gaza, Ukraine, and others were rampant. [*][*].

It should be clearer how negative peer pressure can harm our decisions and our mental health. Disconnecting from the grid and living an efficiency-focused lifestyle may allow you to further minimize your reliance on peer approval and social media. And, this lifestyle encourages you to avoid ill peer interactions all together. Those peers that are wasteful, greedy, materialistic, discriminating, untrustworthy, etc.; will naturally become less-relevant in your life. And, unless these peers are extremely tolerant, they will eventually “shed away” on their own. Some of your peers may become accepting of your noble and efficient ideals, and perhaps join you in similar efforts. That’s great if it happens, but be prepared to shed some, or many, of your “friends”; as you fully engage in a highly efficient lifestyle.

Spending less money, less resources, and saving energy by not-using your air conditioning and minimizing the use of other comforts, for example; may put strain on close relationships. But, increased time for leisure, and the increased personal investments and activity may offset these strains. You may also gain other or additional friendships during your off-grid efforts. And those may be “more-aligned” with your true personality, thus more pleasant company.

Since, I am convinced that your interest in this broad set of values, surround living off-the-grid: justice, efficiency, freedom, creativity, and reasonableness; are values I believe you likely grew-up with. Meaning, your experiences taught you to value these. So, you'll naturally gravitate toward those that share those with you, and value them. So, feel fortunate if you are accompanied by those that share your values. And, try to help to understand; those that lack these experiences. But, again, don't expect a warm reception from most. And, accept that, "that's okay too!"

Simplify your life

Living off the grid is largely about simplifying your life, or shedding the unimportant. You are to decide what is important to you. To me, the unimportant are property, habits, and energies, that you are not immediately employing for the wellbeing of yourself and loved ones. So let's define these. Property can be material and immaterial. Material property are the things you own and are stored somewhere, they take space, be light or heavy. Immaterial property can be in digital form stored in a hard drive like documents or photographs. Habits are actions that take time from your day, they may be routine, random, or seldomly done. For example, smoking, exercising, and going to a place of worship are habits. Energies are available means to energize something. Money is a type of symbolic energy. In money, we must agree that it has the power to generate voluntary labor, and be accepted in exchange for a finished product, like a chair. Energy is also what we accept as the conventional types; electrical, pressure, chemical, mechanical, etc. For example, we may store electrical energy in batteries or chemical energy in tanks, to have them ready at a point of dispensing, like an electrical socket or a spigot.

Simplifying your life entails discarding those things, habits, and energies that are not being actively used for good. It is up to you to define what "actively using" means, so you can better determine what things in your life qualify as "unimportant". To me, unimportant things are those that are "collecting dust in a closet"; sitting in paid storage; under a pile of other things; forgotten and out of sight; out of easy reach; with no practical or emotional use; etc. There are many other qualifiers for "unimportant" to list here, but you should get the point. Unimportant habits may be: time-wasting habits; harmful or unhealthy habits; habits that are depriving others of your attention; or habits depriving you of needs and wants; etc. By "wants" I mean the things you don't need to live; but they are legitimate and reasonable goals that allow for greater happiness.

Shedding the habit of using excessive energy is a big part of living off-the-grid. You should share excess energy away from you if you cannot use it efficiently and productively. That excess energy should be offered so that others may use it, or it should not be produced in the first place. For example, if you plan to grow food, only produce that which you can consume or share. Any excess may cause waste. Also, If a wealthy individual lives on 10 acres of land, while at the same time there is a severe homelessness crisis in that community; that individual has stored excess energy in the form of space. Unless the land is being actively used for living, food production, or other; it is being wasted. In cases of land use, many others may benefit greatly if land owners were to parcel and donate most of their land, for example to homeless individuals willing to "move in". Likewise, having too much electrical charge stored in your solar battery; is an example of a waste or "overshoot". Overshoot indicates that you went well over your needs; on electrical production and storage. Again, in this case, you should direct some of the resources spent on the system; elsewhere as needed.

Simply put, simplifying is attempting to do "just-enough" good, with "just-enough" resources. I understand this is an idea, a goal, a concept that may never be perfectly achieved. But, it is worth trying,

and to constantly attempt to find that balance. And, as long as you are “in the ball park”, you should be proud and satisfied with your efforts. Some of us may be more-demanding of ourselves and push efficiency closer to “optimal”. But, these limits and goals are lines to be drawn on an individual basis.

I believe that “doing more with less” promotes personal peace because it brings more organization to your mind. You can “declutter” to the point that mind clarity can enable deeper, accurate, and sound decisions, which will surely yield more-productive and advantageous results. Some may call this: “consistent good decision-making” or “wisdom”. This may bring peace through your continued “just and reasonable” judgements. As a result of your reliable and consistent positive outcomes; your peers may be attracted to your methods and ask for your help. Just remember to keep yourself modest and efficient, and resist any influx of excess energy in the form of personal “power”. Again, today’s society is set up to give excess power to those that make sound decisions. And that “excess” begins to contradict the off-grid, sustainable lifestyle.

Promote world peace

The other type of peace in the context of living off-the-grid is world peace. World peace is the broad term I use for peace external to your person. It begins with peace with the people (and other life) in your immediate space or room. Peace is the absence of violence, forced control, abuse, or coercion. Peace is the allowance of life, health, and self-determination; for others that live around you, and far from you. The logic is simple, “do unto others as you wish them to do unto you”. So, world peace is the extension of this concept to all other persons, and animals. The right to exist, live, and carry a healthy, dignified, and self-ruled life, should apply to you and others in the same manner. If these were respected, in all instances, I believe war and conflict would not exist. The living-off-grid, efficient and just lifestyle, instigates us to live in peace if only so that we too can live in peace and carry our autonomy.

You may ask, what is the ultimate source of peace? Who or what brings it about? And who or what enforces it? I believe that historical, scientific, religious and moral teachings; teach us the importance of an orderly and peaceful community. And, the drive to self preservation should be the main driver to be peaceful with others. So, I believe “we” must be the source and enforcement of peace. If we require it, and agree to uphold it no matter the situation, then it will remain the norm in most instances. I understand nature is full of conflict and seeming chaos. But although other animals generally engage in killing and conflict because of necessity, I believe historically, human violence and conflicts have never occurred out of “necessity”. Historically, we have used aggression as the ultimate enforcer. And, I believe that arrogance, ignorance, greed, territorialism, racism, and more; best describe the reasonings of our past and present conflicts. I believe, nationalism, religious views, and racism, especially; have fueled our most recent and deadly conflicts. For example, world war 2 was largely fought over territory, resources, and fossil-fuels. But I believe, nationalism, racism, and religion were the real driving force. For example, Germany and Japan looked to expand into territories and resources controlled by other expansionist powers. This triggered the violent response of those other powers, which were engaging in colonialism long before them. I believe the ongoing massacre in Gaza has been fueled by racism and religion. Other past violent conflicts in Indochina, the Middle East, Africa, and much of the political crisis in Central and South America have been largely caused; over fossil-fuel resources or political views. Although racism, and political and religious differences are problems we must address outside of the

context of the off grid lifestyle, living off the grid allows you to contribute to end the apparent need for wars over resources.

Oppose conflict over fossil-fuels

The living off-the-grid lifestyle I advocate here, largely calls for: 1. transitioning to an extremely-reduced use of energy and resources first; then 2. transition into using alternative and renewable sources of energy. These two core steps reduce the demand on fossil-fuel energy and resources significantly. Yes, I understand that even the leading alternative energy technologies require the use of some fossil-fuels (at present), for their manufacture and transportation. But, even when accounting for these, if this strategy would succeed, the demand on fossil-fuels would be only a fraction of what it is today. A growing body of studies have demonstrated this point, that the widespread manufacture and use of alternative energy technologies would, in fact, dramatically-lower demand for fossil-fuels. [*][*][*][*]. Accepting this, and lowering the world-wide demand for fossil-fuels; conflicts over fossil-fuel sources and extraction would, "in theory", also significantly lower. I say "in theory", because this argument is yet to be fully tested. I believe we are now in the rapid transition to alternative energy, and it remains to be seen if wars over oil turn into wars over lithium, cobalt, or manganese.

I wholly believe it would be more peaceful under a renewable energy paradigm, but as ignorance and other abhorrent behaviors may increase with other factors, as many trends seem to show; that future is anyone's guess. There's little we can predict about the future nature of conflicts, gauging by recent developments around the world. And, there is a lot to be wished-for, about the future human behavior over minerals and the remaining dwindling fossil-fuel resources. Hopefully, there will be less than the current amount and severity of our conflicts, soon. And, hopefully our approach to green energy resources is more mature than the "take it by any means necessary" approach of our past. But seemingly, we are already "chaffing at the edges", noticeable on the recent Sino-American-Taiwanese tensions which surrounded the high tech chip industry. And, it can be seen that major world powers are "swooping in" into areas to secure resources, for alternative energy technologies, fast. Whether within their national territories or abroad, nations are acquiring and leasing lands for mining at a fast rate. With major industries moving clearly into electrification, like the automotive industry and utility energy.

In tandem, countries and major corporations are moving fast to: 1. secure sources of minerals for the many components of alternative energies. And 2. secure the technological and supply "edge" to secure an advantageous position in those industries. For example, solar panels require aluminum, silver, silica, arsenic, gallium, germarium, cobalt, and indium, among others. Wind turbines require aluminum, and 'rare-earth elements' for powerful magnets. And, batteries, which use cobalt, graphite, lithium, and manganese. The demand for these, and other minerals and metals; has and will continue to increase as we move forward with these leading alternative energy technologies in several industries.

As I estimate, from my humble individual viewpoint, we are moving so-fast into these alternative energies, because we may be trying to "replace" our current energy demand with green energy sources and technology. As said, I believe this is the wrong approach. If we don't simplify our energy consumption, lower it, then we may just replace our conflicts over fossil-fuels, with our conflicts over green resources. The demand must lower, to make the whole system "sustainable".

Our resolve to remain in peace, in our neighborhood and in the world, should not be based on how much resources we think we need, of course. Peace should be accepted as a stand alone requirement,

and a non-negotiable state. And, as a human right, which naturally “follows” from the needs of our other human rights. Life, expression, happiness, self-determination, choice, etc. Having stated this, our lessened dependence on all types of resources, together with our higher-level of environmental and human consciousness; we should finally renounce our most violent and destructive tendencies. These abhorrent tendencies to conquer, expand, and control by force, will perhaps soon be replaced by increased voluntary trade and amicable agreements, which are enforced not by force but by class-action. Meaning, by non-violent “consequences” decided upon by the collection of other players or nations.

Promote freedom

Freedom has many definitions. In the living off-grid context, freedom can be described as being free from high costs, debt, forcible lifestyles, unreasonable taxation, etc. There are other, more traditional, definitions of freedom that are essential to being able to live off the grid, and that are also benefits of such lifestyle. In other words; some freedoms are required so that you “can” live off grid. While other freedoms are the result of this lifestyle. These “required freedoms” must be “extended” to you, by your neighbor, community, government, etc.; as human and civil rights. In turn, you must extend these required freedoms to your neighbors as well, and even your animals. Here, I will discuss the “required freedoms” of choice; expression; and the pursuit of happiness. Then, I will delve into the benefits of living off-the-grid: financial, time, mobility freedom, and freedom from employment.

Promote freedom of choice

You must have, keep, and demand freedom to choose, if you are free and live in a truly free society. Choose how to do basic things like dress, behave, speak, etcetera. No one should demand of you how to behave. As long as it is not harmful to others. Furthermore, you should not be forced “to make” choices. Free peoples should be able “not-to choose from certain choices. If you are ‘required’ to make a choice, you are not ‘truly’ free. For example, choose to identify a certain way, religious or not, catholic or protestant, democrat or republican. If you accept “to make a choice”, then two or more viable and distinct choices should be provided to you. Oftentimes, in our society, we are coerced into “non-choices”, or a choice between a “cherry picked” option, and another that will surely ruin you; making your predicament disadvantageous in multiple ways. For example, the choice between “getting a set of vaccines” and “not being able to attend public school. I am not a anti-vaccine person, but a choice should give you viable options.

To go back to your freedom to choose, the fact that you are “required” to make choices, suggests a control-controller situation. That goes against freedom of choice, does it not? In fact, in a totally-free environment, you select the choices to make the selection from. But, this is clearly not the world most of us live in. For example, when selecting housing, most working adults have no choice but to pay for it. Either pay, or choose homelessness. Other choices are just not viable, like temporary shelters, or camping out indefinitely. These are not ‘viable choices because not many like the prospect of being homeless and suffer the many life-threatening consequences of it. Also, you are not choosing the candidates that run for office, in practice, do you? Here in the US, political candidates often seem to be “rolled out” by the rich and powerful for us to “vote-for”.

Other “non-choices”, in our grid-tied lives, include: buying food; working for an income; choosing where to live; choosing what to do for a living. These, and more, are often ‘choices’ given to us with limited options, or even a single option. For example, if medical school is extraordinarily expensive in your state or nation, going to medical school is not a choice for the 99% of prospect students; with little to no income. Effectively this is not a real choice for the poor, is it? Since it is practically and expectedly extremely unlikely to occur. Still many yell “the opportunity and choice is there for everyone”. Living off the grid “grounds you” to this reality, and its concepts encourage you to fight for your freedom of choice, and fight against the imposing of non-choices. For example, in most instances you have the choice to disconnect from the grid, but the alternative may be so dire and undesired; that most of us don’t even consider it. For example, if you live in a rented apartment and with a family. Disconnecting from the grid may be forbidden by contract, or even local ordinances, or if you have children; in some locales. In such a case, you’re not given a viable choice. Although, some valiantly-determined individuals may still make the choice to disconnect, and “fight an uphill battle” in the courts and win; most people won’t take such risk because they way the system is set up. This is another big reason for writing this book. To help you develop the methods that would make “disconnection” a viable choice. For example, I recommend that before plans for disconnection from the grid take place, you must ensure that “the system” will not fight your decision with ‘tooth-and-nail’ at every step of your journey. In other words, make sure you have a reasonable shot at succeeding in your disconnection plans, under the ordinances and social environment you live in. If it is exceedingly difficult to make such a decision, then it may be best to vote with your feet and move to a more ‘friendly’ environment, or simply remain connected and not use those services. Consider that, if moving is a better option, you may not have to move too far and change your entire life. Just further from the areas of ‘high’ control or perhaps just another apartment or home with less ‘stipulations’ on their contract or covenant. Again, you may make strategic and creative choices that yield the same or similar results. Like, if you are not ‘allowed’ to disconnect from electric service; just, keep the ‘connection’ and turn off your main breaker. This should yield similar results, perhaps with a small connection monthly fee.

Remember, as a human right you have the fundamental freedom of choice, and you cannot be made to pay for anything. Unless the authority coercing you to pay is willing to pay for you; you cannot be forced to purchase any service, especially from any one specific provider. This is surely unconstitutional in the US, and to my knowledge, is yet to be tested in the high courts.

In your plans on how to live off the grid, you will have to find additional choices for the services provided by the grid; oftentimes on your own. Because the grid wants you to “remain in your place”, other choices may be suppressed or made difficult to find. As we’ve discussed, there are several choices for water, electrical, and communication services. As examples, you may catch, pump, or channel water to your filtering system; you may generate electricity from the sun or wind; and you may use radio and computer equipment to communicate freely. These are just some of the many other choices for grid services. But, the attempts by your government to control all things and people, into a mold they’ve created, hide and make alternative choices are often undesirable. But, as an off-gridder, you must break through the artificial barriers placed by your governments and the “middle people”; and valiantly behold the possibilities.

Promote freedom of expression

Another basic human right is the freedom to express yourself. This is also a constitutional right in the US. You should not be punished, or inconvenienced by governments, for your actions of expression. You should speak your mind and communicate freely and without fear of persecution. This right is the basis for the use of communication methods and technologies; free of charge. Charge is a type of "barrier" or "limitation" that should not be imposed on any person; by constitutional right. This right extends to actions of expression.

What you do to express your identity and personal preferences are types of communication. For example, If you choose not to have electrical services, or water services; are expressions of your lifestyle preferences and your personality. Again, you cannot be "made" to make choices. That would be forcing you against your will, thus despotic.

So, before plans for disconnection from the grid, you must ensure that the system you live under "allows" for freedom of expression. Not every area of the world has these freedoms. But, if you live in a society that considers itself free, then this right should be a guarantee, and you can invoke it when disconnecting from the grid. For example, you may invoke this right when you want to install and use communication equipment in your place of living; such as when installing antennas and radio equipment.

Promote freedom to pursue happiness

You have the freedom to pursue happiness in the free areas of the world, and this can translate as having the freedom to live as you wish, as long as you do it in a peaceful and reasonable manner. No entity may impose on you a certain lifestyle, just because of your geographical location or any other protected trait. So, if you are happier by living off the grid so be it, that's what you should be allowed to do. As discussed thoroughly here, living off the grid is not in any way harmful to the participant or her society. And, happiness cannot be achieved under economic or social coercion. Furthermore, as mentioned, you may not be "made to pay" for anything, because doing so would clearly violate human and constitutional rights. By extension; having money is not, and it should not be, a requirement in any society. And, even if everyone had sufficient money in a society, to discriminate on the basis of "who has more money", would be a fundamental violation of all sorts of moral, religious, and social rights.

Happiness depends on many things, but we can all agree that it truly depends on just a few basics: life, health, and reasonable freedom. Without any of these three, happiness is not possible. So, to limit or curtail any of these is a violation of freedom and each person's right to the pursuit of happiness.

If you genuinely believe that living off the grid brings you a better life, then live that way. If you are certain that living off the grid brings you better health, then by-all-means, live that way. If you believe choosing the off grid lifestyle gives you freedom, then this lifestyle should be allowed to you.

Again, where you live, the government should allow your freedom to pursue happiness. This is to say, to pursue a better life, better health, and healthy personal freedoms. If these are not afforded to you, then there must be a change either with your government or in your living situation.

If your government or community is not free, you may petition and demand your freedom as a community. But change may come only grindingly slow in this way. Or, you may vote with your feet, and

leave the unfree area. I understand this is often difficult, but there may be other locations with the freedoms that you should have; within your reach. I am a hardened believer that if the world allowed reasonably free movement among borders, the world would be a better place. If only because the "undesired" areas would quickly become 'population deserts' and soon change for the better or collapse. This is a sensitive topic, especially here in the US and as I write this. Anti-immigrant sentiment is very high, partly due to the current political rhetoric. But, open borders have hugely helped many areas of the world. It generally brings wealth, peace, and cooperation among nations. For example, the European Union, the United Kingdom, and the United States, all greatly benefit from an open borders policy within their unions.

Promote financial freedom

Basic math and some honesty will quickly make it clear that the grid is "ripping you off". Naturally, getting off this grid will, in short order, begin to give you financial freedom. Financial freedom is a two prong achievement: 1. freedom from debt, and 2. freedom to participate in the economy. Most of us may be familiar with the benefits of being debt free: less anxiety and stress; more money in your piggy bank; less waste of your hard-earned funds; freedom to use your money in more ways; etc. Efficiency should not end with saving and smartly using water, energy, or resources. Efficiency extends to your finances. A large part of efficiency is doing more with less. Right?. So, "trimming the fat" is among the first things you can do to save money. First and foremost, cut back on luxuries and lavishness. Second, if you are in debt, with the savings you gain through efficiency, you may pay off that debt. You may, through efficiency, earn more and pay off your debt. Third, you may spend less and earn more to pay off your debt. Fourth, you may re-structure your debt to more convenient terms, such as putting some or all of your debt in a lower-interest rate loan. I know these are simplistic overviews of some strategies of being debt-free, and it may take a long period to achieve. But, it is a huge benefit, thinking efficiently and taking efficient actions to eliminate debt. I was severely in debt many years ago. And, after some soul searching and learning, I took bold action to eliminate it almost completely.

Living off the grid partly means "not" getting ripped off. So why would you allow this in your financial life? Once debt free; It is best to stay away from credit cards, loans, leases, and mortgages; if at all possible. I understand that in many cases some of these are "set up" as virtual "inevitabilities". Such is the case for shelter in most towns and cities. Where a mortgage is almost unescapable. But, you should always explore alternatives to loans and debt. Or, you should have it as a goal to be debt free as soon as you can achieve it; even for your shelter. It is possible not to have a rent or mortgage debt. Many people are, right now, not paying any bank for their home or apartment. I believe that home loans and mortgage debt are among the largest scams in history, and among the most harmful types of debt for people; especially in the US. I strongly believe this because most mortgages charge you annual percentage rate (APR) interests that renew "every year" based on the balance of the loan. This could add up to several thousands of dollars per year, paid extra, for an average home in the US. And, mortgages also include other "fees" that often add up from several hundred to over several thousand dollars (on average) per year. For example, required homeowners insurance, flood insurance, loan insurance, and more.

Home affordability has all but decreased, in the US, in many areas and in recent years. [*]. In some cases, a mortgage may balloon to close to more than double the original cost of a home. For example, a $150,000 mortgage may end up costing you close to $300,000 by the end of the life of the mortgage. I,

for example, in 2006; I mortgaged a home with a private lender, after being discouraged by my realtor from pursuing a government backed mortgage. So, I purchased a small home in East Central Florida for about $150,000 at close to 7.5% APR. Due to this abusively high APR, my monthly payments were stupendously high, about $1400 per month! This high payment was a blow for my modest income level of the time. This travesty happened at the height of the housing market inflation bubble of 2006. And, after I reviewed how much I would pay for the home in total; it was over $300,000! This made me lose sleep, and was enough to make me want to quickly get out of this situation. Plus, the job market was very poor at that time and area, especially for immigrants like me. Just as a side note, as I write this, CBS News reports that mortgages are at a 20 year high average of 7.6%. [*]. Mortgages are the few things that make me wonder; "why has there not been a full-bore economic rebellion against them yet?". Avoiding, minimizing, and getting rid of mortgages, and any debt, are central goals of the living off the grid lifestyle. In fact, this is so important that attempting to live free of rent and mortgage should be the off-gridder's goal on day one.

Among the benefits of thinking efficiently should be to extend that efficiency to the structure you call home. If your home is too large and wasting space, resources, and features; then it is time to "downgrade". You may not need many of the physical features of your home, and others may actually use them or even need them in theirs. So, you may "trim the fat" by selling your home, and downsizing to a place that you can "fully utilize". With the earnings of your home sale, you may be able to purchase a smaller and more efficient home, and remain in less debt or even be debt free.

Make no mistake, through your off-grid efforts you'll surely gain more freedom to participate in the economy more fully. I am convinced that with your increased knowledge and skills your earning potential will improve. With better savings and money management, your wealth may increase. And, with more time available, you may engage in smarter and more productive financial activities. You may engage in the trade of goods, services, and property. You may launch a business, or engage in beneficial financial investments. Or, you may want to step away from anything financial, and find it less stressful and more satisfying to not use money. I believe that you may reach the level of material freedom where money is not needed. Of course this may be dependent on the mentality of your community. Here in the US, owned property taxes are perpetual, in incorporated areas or areas with a jurisdictional government. [*]. Other types of taxes may be mandatory during your working adulthood such as income taxes. Sales taxes are always mandatory, in the US, for all purchases. So, even if you "own" all of "your" property, you may still have to pay to "own" it. But, you will surely have more choice in how much you participate, or not, in the economy; because of your increased earning potential but more importantly because of your increased self-sufficiency.

Promote time freedom

Time is among the most precious resources we have as people. Our society has taught you to sell it, in combination with your labor, loyalty and obedience. These are also called "jobs". The average American, aged 25 to 54, spends over 40 hours on average per week; at work. Other nations' weekly hourly averages may range much higher, such as: Mauritania 50 ; Kenya 48; China 47; and Mexico 44. [*]. Other averages are lower, such as in some European nations. In the US, we spend close to half of our waking hours at work, including preparing for work, and recovering from work. And, most people are employed in "jobs" that are ideal, they dislike, or hate. This is so prevalent, that ideal jobs are often referred-to as "dream jobs". And, as we know, a tiny minority is currently in their dream job or anything close to it. In

fact, only 10% of Americans report to be working on their "desired position". [*]. So, it is reasonable to assume that most of us would rather be doing something more "desirable" with our time. Many of us only wish to be doing something engaging, satisfying, and to work in a place where you are more valued and respected. Capitalist employers and corporations, which are most of the world's businesses; are highly incentivized to be dictatorial and rigid. They are authoritarian to the core, and often demand unreasonable commitments from you; expecting and demanding more and more of your time and resources. All for the benefit of the company. If you've been employed for some time, you'd surely experienced disappointment after disappointment in your working career. Missing out on time with your family or loved ones, missing out on a birthday, birth, trip, wedding, or other family gathering. Often people have to work on weekends, when many others have some time off. I certainly have my share of these disappointing "misses", due to demanding work requirements. Others feel they "have to work" odd hours, and night shifts. Further putting pressure on one's social life.

Living off the grid empowers you, in many fronts, to allow you to claim your time back from the control of your employer. You will be more aware of the pitfalls of capitalist society, and attempt your best to avoid them. Your increased skills, knowledge, and resourcefulness; will surely make you a more valuable employee. This means that you may gain the attractiveness for other and better paid positions, within your company or organization; or in others. You may also gain the power to detach from employment all together; and start your own business or self-employment. Many people have found the determination to detach, and have gone-on to start what would be successful corporations. Some may grow to be large employers in a community. There are countless examples of such occurrences, in fact most successful business people worked for an employer at some point.

Again, living off the grid lowers your need for money by empowering you with skills and knowledge to be self-sufficient in many ways. This "less-need for money" will surely detach the value that employment has in your life, and you may choose not to work as many hours, or not work for any employer. That is a possibility, and something many have engaged in. Don't get it twisted, you are not lazy or unproductive, if you decide not to work for an employer. In fact, this may unlock a lot of time that you can then use for things you value and enjoy. The range of things you may use your time on are too great to list here; but engaging in your "dream occupation" may be one of them. You may unlock enough time to gain traction in your dream job, enough to get good at it and become proficient-enough to earn a living from it. You may choose to get employed doing your new occupation, or remain self-employed or launch a business. You may choose not to work in the "conventional sense", and do an array of other activities. You may engage in research, discovery, inventing, or helping others. The possibilities are many.

Promote mobility freedom

When planning to live off the grid, initially, you may find yourself in a place that is utterly inadequate, unwelcoming, or even hostile to this lifestyle. You may find it wiser to just move to a 'better' place. This new place may be "down the road" or another nation; situations will vary greatly. Hopefully, you will have the ability, resources, and the freedom to "make your move". Many areas of the world have restrictions on mobility, and in many cases, you may have to "do your best" where you currently live. For example, you may not be able to easily leave your nation, or sometimes even your community, due to a variety of reasons; financial, political, religious, or due to conflict, family needs or needs of your community. But, moving, I believe is a viable way to "make a stand" in what you believe. If your

surroundings are “against you”, while other places are willing to support you; then it is wise to go to other places when possible. And, moving is a way to “vote”, and send a clear message to the current leaders and inhabitants of that area. That message is that this area and its environment are not suitable for you and others like you. Once you, and others like you, vacate, the absence will impact that area’s economy and social fabric; just enough to make your message heard. It may be subtle, or it may be silent; but I believe the message will be received one way or another. And, in the process, you will likely be freer and happier. We must “demand” freedom of movement from our societies, because to curtail it may mean to limit the safety, health, or happiness of many. As an immigrant, I absolutely support free migration and open borders. I believe there would be greater order, peace, equality, and happiness in the world, if people were allowed to move about freely. Think of the United States and how its citizens can easily move from state to state without any documentation or questions. This is a great benefit that has stabilized the entire nation and has generated great metropolises in “desired areas”, and deserted wastelands in “undesired” ones. For example, when many of the “good” manufacturing jobs left Detroit, so did a great number of that city’s population. If this population was somehow “restricted” from leaving, the area would have become unsustainable and overflowing with extreme poverty and countless other problems. In this fashion, if the world’s population was allowed to move about freely, I believe the populations would redistribute in a more sustainable manner and alleviate the many problems caused by overpopulation. Of course, this is a prospect that is, right now, inconceivable and absurd to most people and governments; but I believe it is one that we will eventually reach as a humanity. I believe the main barrier to open borders is artificial nationalism and racism that are taught to most children.

Once you are off the grid, you are more likely to relocate with greater ease. You may have more time, resources, and finances to go to more places; have more options as destinations. You may have less dependency on your employer, or you may not have an employer. You may have less bills and less financial responsibilities. And, you may have more money to spend on vacations, trips, or relocations. But, as an off gridder, you may find you need little or no money to go on vacations and trips. Some off-gridders may choose a transient lifestyle, where they live in a motorhome, recreational vehicle (RV) or a camper van. Yet, others may get more extreme and live from a backpack and walk or bicycle to many areas of the country or the world. I have discussed these extreme lifestyle options at length in my series “Living Off the Grid Renegade Style”; check it out!

In summary, freedom of mobility is both a requirement and a benefit of living off the grid. And you should feel that you are permanently “nailed” to a certain location. And you should be able to vote with your feet whenever necessary.

Promote freedom from employment

Since most of us are employed in a field we don’t really care about, and we spend about half of our active lives in our “jobs”; it would be immensely beneficial to live off the employment grid. The employment grid is simply your “need to be employed”, a status where being employed is optional, not necessary. Most corporations and the so-called “employers”; participate within one of the most despotic and cruel systems we have devised; “capitalism”. [*][*][*]. Under this system, authoritarianism comes from your dire “need” to earn money. It would take another book to describe how I can make such a claim about the most widespread economic and social system in the world; but briefly, just think of the heart of capitalism; the corporation. In the US, the corporation is a sort of dictatorship within a

democracy. It is a place where you are effectively “owned”, for part of your day. Where you are routinely “told”, by someone declared as your “superior”; “what to do”, “how to do things”, and “how to behave”. In a corporation, demands are generally made of you without your opinion or vote, and decisions are routinely made about the business that affect your life such as working conditions, working schedules, and tasks, mostly without your input. And, you may be easily fired and replaced. This fact is almost constantly being reminded to you; for your continued submission and servitude to your “boss”. It is no wonder there is an epidemic of discrimination and abuse worldwide and daily, within countless corporations under capitalism. If you, even partially, accept any of these traits of corporations as true; then you’ve begun to appreciate the value of freedom of employment. So let’s describe this freedom a bit more.

As established, living off the grid will likely have positive outcomes: Greater time freedom; increased profitable skills and knowledge; smarter and more efficient finances; and greater freedom of mobility. These “perks” all contribute to your “freedom from employment”. Again, freedom from employment is the freedom to choose to be employed or not; to be over-employed; to be under-employed; or to be independently employed. Independently employed could mean being a business owner, or an independent skilled trade worker; self-employed. Freedom from employment may mean being able to switch employers more easily, or “gain” your due respect and responsibility at your current employment. I write “gain” because this is not always given when earned. In a highly unfair system, such as our current capitalistic system, you often have to *demand* fair treatment, fair pay and promotions. Freedom from employment may mean earning your fair share and perhaps being able to retire earlier. Or being able to work less and not feel the “economic pinch”. Simply, freedom from employment is just having “more choices” in your employment situation.

Being highly self-sufficient and off the grid surely makes you a more valuable employee, if you choose to be one. You have achieved what only a few people in any community have. I strongly believe that large modern towns and cities generally are concentrations of wasteful people and squandered resources. There, lavish lifestyles waste many resources, and pollution and inefficient methods are constantly used. For example, most transportation vehicles are gas operated, and most buildings are “energy hogs”. So, having achieved a high level of efficiency in this environment takes much discipline, skill, knowledge, and willpower. All of these are valuable traits you have or will have learned and earned during your off-grid efforts. Again, it takes a significant level of understanding of many technologies and concepts that are widely used in industrial and commercial environments; surely making you a very attractive prospective member of any company. These give you a few advantages; you will likely have more choice for positions and employers; more choice in benefits and pay that you may require; and more choices in your working conditions, such as hours, place, etc.

You may also have more freedom to decide to go into business. Your efficiency, expanded skills, and valuable personal traits may propel you into a successful business. You may choose to get involved in more career fields after you find that efficiency is a critical ingredient for success. Or, you may get involved in one or more of the many technologies you learned-about, used, or developed during your off-grid efforts. For example, I got involved in solar technologies, as a curiosity in 2010, and have since learned about it “enough” to work in the solar industry as a PV technician in the field. You may also focus on one technology and develop it to a high degree as a product or service; or you may corral a few technologies and embark in a multi-product or multi-service business. These, and more, choices may be at your disposal for employment or earning income because of living off the employment grid.

The benefits of the “greater choice and freedom of employment” depend on what you choose to do with your time and skills. You may find yourself with much more time for personal and family activities; or you may choose to work less or not work for any employer. Or, you may find yourself with much more financial and material resources if you choose to earn more money. So, these benefits seem to revolve around time and material benefits. I strongly believe, if you keep your efficient, reasonable, wise mentality during and after you reach any or all of these benefits; you will surely be a happier, more productive, and wholesome person as a result.

Promote privacy

Privacy can be described as the personal ability and choice to live anonymously and free from unwanted surveillance by others. It is living free from the discriminatory and or unreasonable watch from individuals or technology. It is living in your personal digital spaces, free from data collection by any automated system or individuals. Privacy is living without the fear of deceptive practices that trap you, or coerce you, into giving up your personal data in exchange for goods and services. It is keeping any identifying or unique personal trait unknown to any individual, institution, or system, and maintaining control over who or what you share those with.

Privacy is not absolute, I believe it should not be. Absolute privacy is absolute isolation. And, humanity is a social species dependent on the company and cooperations of others, and dependent on many benefits of a larger community. It has been proven that human development and healthy behavior is dependent on the exposure to learning with many other individuals. And, a reasonable diversity of exposure is healthy for all sorts of reasons. With these in mind, others will often want to watch your behavior and actions. Also, others may distrust you and may want to determine your intent by watching you. It is often good for others to see you, for example to see and opine on your work and your products, or just to interact with you. Also, abhorrent, harmful, or potentially criminal behavior can be detected and regulated by others, when you are watched, as we all experiment and make mistakes, and others may help you realize and correct those bad behaviors and mistakes. But this “watching” may become excessive, unreasonable, and not based on good intentions.

Why is privacy good?

As adults, we are expected to apply our learned behaviors and skills and contribute to society. These often need trial and error, and a healthy amount of privacy and autonomy. The question then becomes: What amount of privacy is a good amount? This is difficult to quantify, but we can agree that a reasonable amount is good. Privacy allows for peace of mind, happiness, and a healthy balance of power among individuals or groups. Privacy also allows creativity to flourish. Privacy is also necessary for a healthy life with a sense of security. It is desired, by most people, to go to bed without your neighbors watching. We normally turn off lights and close window blinds when asleep. We like to sleep, mostly, off the ground and in a secure place. I believe this is an evolutionary trait, with obvious practical reasons; remaining from our ancestors who dwelled among predators for many millennia. We surely may not be able to rest or sleep, with strangers among us that may be watching. Most of us would see this as a threat. We prefer the company of people that we trust, generally family or close friends. Those near us that have no sympathy or share little or no personal connections with us may make us uneasy, at the very least, insecure at worst. And, I believe this is what privacy centers around our security.

Too often, those that don't routinely share a space with us tend to not share. r interests and have little or no sympathy or compassion toward us. And, those may exploit any information they gather about our private lives. Our private lives are called "private"; because we accept, they must remain "little known" to those outside of our close personal networks. Our private lives include actions and routines that may be exploited by those that don't appreciate our personal worth. Things like our home locations, our exact daily routines and our personal preferences are a few things most of us rather not share with the world outside of our personal group. This personal information may be exploited to undermine, disrupt, or even attack us, personally or in our communities. Historically, rivals took these actions, so we have evolved to be naturally distrustful of "outsiders". I believe this distrust is a passed down "wisdom" from former generations. Of course, too much distrust and unreasonable rejection lead to all sorts of problems, such as, unnecessary isolation, discrimination and racism. But, I believe a reasonable amount of precaution is necessary, evident in the common occurrence of all sorts of abuses and attacks; perpetrated by opportunistic and deceiving individuals and groups.

When we remain comfortably private, we are happier. Some say that if you have nothing to hide, then why hide? This argument both mis-defines privacy and misses the point of it. Being private is not hiding, it is having the "choice" to only allow those you trust to know in your private life, or not. It is having the option to live, whatever part of your life, outside of the peering watch of those you don't trust. Private matters may be the things you do in your bedroom; conversations you have with your close friend or partner; or the spoken details about your upcoming vacation trip. Companies know the importance of privacy when they develop innovative products or methods. These, and countless more, are desired to happen in the privacy of a safe place and away from known or unknown snoopers. Remaining private is an expectation that your trusted space remains as such, away from 'eyes' and 'ears' that may use your personal information for all sorts of "ills". Ills may be as innocuous as a personal small smear or harmless gossip among neighbors; or it could lead to something as severe as a deadly attack.

Having said this, I believe hiding information, especially that could benefit others, is not good. For example, withholding information about a possible hazard is clearly harmful to others. And, this is different from withholding your geographic location from a social media platform that is looking to map out your travel routine to later sell it. So, withholding, lying, and covering up, are not the same as remaining private and having respect for other's privacy. Furthermore, privacy is something that must be mutually agreed-to, by all parties. It is something that should be a guaranteed human right, and definitely so in free nations. The right to life, expression, and the pursuit of happiness, are a few of the rights often cited supporting the right to privacy.

I believe privacy incentivizes some types of creativity, ingenuity, and discovery. At times, work in certain fields and subject matters are not welcomed by society at large. Certain cultures may not allow or accept work on things that may turn out to be great benefits for humanity. History is replete with such examples. In the mid-1500s, Galileo Galilei was "admonished" by his government by the "heresy" of his study of astronomy. In the late-1500s, Giordano Bruno was executed by his community for his, thus-far correct, then-dangerous; prepositions of an infinite universe and a multiplicity of worlds. In the 1960s, Dr. Martin Luther King was largely considered a "communist" and an "extremist" for his views on social justice, non-violence, and opposition to the Vietnam war; all of which are now mostly accepted as positive world contributions. I believe that these, and countless other individuals, performed much of the work they contributed to society in the safety of their privacy. Even when their outside

communities largely opposed such work. I believe that the work of countless other scientists, artists, leaders, and influencers happened in privacy. With their work only being 'published' when it was ready and with diminished chances of it being stopped by the ignorant and powerful. So, I believe we owe much good, in our history and present, to those brave individuals that worked on great advances for humanity in the safety of privacy. Yes, there are times that privacy necessitates strategic positioning, which may appear as hiding. But, when your personal safety and the fate of a great advance are on the line; this type of privacy is needed.

The invasion of the privacy of those that are law-abiding and reasonable; is potentially harmful for them, because of the clear opportunity for abuse from invaders. They may collect your personal information without your knowledge, with the advantage of disassociation and indifference to you. For this, these people can act to harm you, with little remorse. This has occurred repeatedly throughout recent history. This is an unnatural unbalance of power that is well known throughout the world. And it is why governments protect and attack privacy amongst themselves; often called espionage or intelligence. Lastly, without you knowing the intentions of 'others', your sense of security is undermined by violations of privacy.

Who may be invading your privacy?

In the US, and around the world, privacy has been treated as a privilege. But, since the law must assume your innocence until proven guilty, you should not be surveilled unless there is reasonable cause for suspicion. Again, privacy has been often unreasonably violated by individuals, groups, corporations, and governments. And those looking to do harm often utilize their right to privacy to operate covertly, such as police departments or government agencies. And, apart from cases where reasonable causes exist, powerful individuals and governments often use "legal loopholes" and unreasonable and discriminatory practices; to violate the privacy of other individuals and groups.

To focus on privacy in the context of living off the grid, I will discuss the privacy of individuals as opposed to larger groups. These few common "players", in the routine violation of privacy of individuals (individuals, corporations, and governments); may violate your privacy for a variety of reasons: (1) to gain personal advantages over you; social, political, economic, etc. (2) for economic gain. (3) to undermine or discredit you for whatever reason. (4) to steal proprietary information for a business advantage. (5) to extract your private data for their financial benefit. And, (6) for pretextual or actual efforts of law-enforcement; crime-prevention, national defense, etc.

Individuals and groups may target you for unreasonable surveillance of your private life because they may envy you in one or more aspects of your life, and they may want to gain advantage over you and a way to control you or undermine you. Socially, an individual may feel they want more power and may see you as a holder of power in an area of influence that you both may share. An individual may exploit information about your routines, location, and personal preferences and attempt to publicize that personal information or use it to publicly harm you. As a side note, everyone has information about past choices or happenings that are irrelevant to the present, but they may be seen as relevant by others. Such information may be "unearthed" by an individual looking to harm your reputation. This tactic is often used, and has had differing levels of success, depending on many factors.

Individuals and groups may get some personal information from you and exaggerate it to discredit you, and it may be believed by enough people to have a negative impact on you. For example, your personal

political views may be discovered by snoopers, and be broadcast in your community, which may not be welcoming of them, however positive they may be. This can cause distress and even danger to you and your loved ones. For example, in my current living environment, to display support for the current president, in any way, is to call dangerous attention for yourself and your loved ones. This tells me that I am surrounded by many violent fanatical individuals, often backed by law enforcement with similar views. In such an environment, acts of vandalism and violence are likely to happen and go unpunished. So, it is best for your political views to remain private. Unfortunately, it is best to avoid possible conflict.

Individuals may target you to undermine you economically. Co-workers and business rivals may have economic interests opposed to yours. They may snoop on your private life to try to manipulate some of your financial decisions. They may try to discredit you using your private information, or to gain a financial advantage. While this is unlikely to affect off-gridders that choose to have less dependency on money; it may affect those with operations that actively use the monetary system, such as business owners.

Rich and powerful individuals, especially, may engage in attacks of privacy; unto those they determine to be “out of line” or “disrespectful” in some way. Often, powerful individuals and groups are intolerant of coexistence with others they believe to be potential “threats” to their financial future. Many of these individuals and groups have grown to be highly uncompassionate due to their runaway greed and lust for ever-growing power.

Individuals and groups may attack your privacy because of hate and other discriminatory tendencies. Religious beliefs, race, culture, lifestyles, and more; are all targets for discrimination by unreasonable individuals and groups. Neighbors may unreasonably keep a distrustful watch on neighbors of “other” backgrounds, such as other race, religions, political affiliation, nationality, ethnicity, etcetera. They may try to listen in or look into their personal lives unreasonably. It may be to “smear them” in conversations among friends or worse. At times, hateful individuals have “called the cops” on others, in hopes to bring them major disruptions or even harm. These cases are quite common and recently have been documented in videos on the internet. The so-called “Karens and Kens”; are examples of these videoed instances, showcasing unreasonable and often violent discrimination and racism. One popular video; is how a dog-walking “Karen” immediately calls the police on an African American man sitting at the park and told them “He threatened my life!”, simply for the man filming her hostile interaction and telling her to keep her distance from him during the height of the Covid-19 pandemic. In that case, “Karen” faced no legal repercussions for lying to the police about a situation, but did later lose her job, and face social harm when the video got wildly popular. There are countless other instances of such blatant violations of privacy, and attempts at harm, due to all sorts of discriminatory behavior. And, in the US especially, there seems to be no shortage of such bigoted people, including many who are willing to cause harm only because of their hatred toward others they deem lesser.

Corporations may violate your privacy in attempts to gain business from you. They may gain personal and identified information; to advertise to you or directly sell you products or services. Corporations may call you or even pay you a visit at your home or place of work, to sell you their product or service. Also, businesses are known to gather information on each other’s products and services. If you are a business owner with an innovative or ground-breaking product or service; you may be targeted for

“information gathering” by corporate or government interests. These efforts may be subtle, but there are many reports of intimidation and even extortion. Corporations and their “agents” may be aggressively territorial and greedy and may attempt to limit competition.

While I believe in privacy, I also believe in the openness of ideas. Corporate secrecy often involves the withholding of useful ideas, technologies, and methods. I think this is mostly counter-productive; following the logic that if someone else is in a better position to capitalize on an idea, then “by-all-means”, they should. I believe it is quite rare for instances where your idea, method, and technology will be duplicated “exactly” by someone else. I believe the diversity of ideas is always helpful, and it is generally no different with corporate interests. As a side note, there are corporations that are specialized in collecting personal information and selling it to other corporations that can then use it to sell their products. Social media companies are the latest and most powerful of such corporations. Their main source of revenue is your personal data, which they collect basically through snooping on your posts and online activity. They encourage your activity by different methods, then monitor it, record it, package it. They then sell it to individuals, institutions, or other corporations, for a profit. The high profits incentivize the social media companies to ask “very few questions” of the data purchasers. So, just about anyone, with enough money, can potentially buy your intimate and private data; collected by social media. Social media highly encourages their users to post as much about their life as possible. But, even if you are careful about what you post; you generate all sorts of “meta data” in the process. For example, when you post a birthday wish for someone, you are potentially revealing or confirming: (1) your close connection to the person; (2) that person’s birthday; (3) your location; (4) their location; (5) your online activity routine; (6) your looks, dress, race, especially if you post a photo or video of yourself, or others.

Social media corporations may build a dossier about you, even over a short period of light online activity, then sell this information without your knowledge. They claim that you are warned about all of these details, and that you are able to control what you share. But, they also know that most people don’t read the hard to find “fine print” and terms of use. Additionally, they know that most people don’t adjust the privacy settings to safeguard what they share. They count on you “not” reading these terms of use and then capitalize on it. Furthermore, social media companies carefully craft attractive online experiences for each user that promote feelings of engagement, trust and security. These are clearly deceptive practices that enable blatant violations of the privacy of millions of people, without their knowledge. The recent social media disclosures, called “The Facebook Papers”, revealed - among other things - how the social media platform encouraged hateful, divisive and extreme content to get more “engagement” from its users. This engagement, however negative, is more profitable. [*][*].

Big tech companies like Google, Microsoft, and Apple, have cleverly moved into the realm of smart phones, and have used this technology to increasingly track your location, your map destinations, your searches, your interests and many other habits. Again, with your personal data from these categories, big tech companies make money by: (1) selling your info to advertisers, other companies, or individuals; and (2) advertising products and services directly to you. In some cases, your personal data may be turned over to the “authorities” or the government with, perhaps, very few questions asked. There are countless examples of this cozy and pal-like relationship between big tech and so-called authorities. [*][*][*]. In fact, big tech may “turn a blind eye” about known infiltrated ‘agents’ within their ranks. Agents who likely “syphon” data out to their respective agencies for all sorts of “shadowy reasons”.

Governments “the world over” violate our basic right to privacy, for a variety of reasons; to include persecution. And their pretexts often cite vague “reasons of defense and law-enforcement”. Many areas of the world don’t even have constitutional freedoms that protect privacy, expression, and other rights. And even there, the government is allowed to freely snoop into the lives of just about anyone, using social media. Putting at risk many users in some nations. Even in so-called “free nations”, violations of privacy are perpetrated by the government, using feeble pretexts of prevention of crime, national security, countering misinformation, etc. For example, the revelations of Edward Snowden, showed how US agencies “wholesale-spied” on the American population, without the required warrants. [*]. Some preventive surveillance may be valid in a society riddled with guns, hatred, anger, and violent behaviors; but when surveillance is done in a “carpet cover” fashion; many may fall victims to misidentifications. Even unwarranted charges and convictions may occur in a paranoid “surveillance state”. Many innocents may be suspected, charged, and sometimes convicted of crimes they did not commit; because someone, or some system, pieced together plausible suspicion from routine actions of a surveilled individual. Suspicion is relative, and if paranoid or biased, you may “suspect” just about anyone who is doing just about anything. I believe there is a fine line to walk during any crime prevention surveillance. There are many ethical questions to answer and many biases to oppose. For example, what behaviors, words, or patterns are to be considered “suspicious”? What locations, items, and actions are worthy of “surveillance”? How does a suspect look, behave, or dress-like? All these, and more, are subject to each individual's biases, which can be many. Biases can remain present even after rigorous training, and the influence of training may be less than that of other life experiences, for law enforcers. This is a monstrous subject matter that spans psychology, sociology, criminal justice, and more. But I believe that society should determine what factors warrant surveillance, how much of it, and for how long. In general, I believe, preventative surveillance should be strictly restricted and regulated. And, it must be open to scrutiny by those potentially surveilled and regulators. It should not be up to a handful of “specialists” within a government agency to decide these things in secret. The US has checks and balances for government surveillance in the form of warrant requirements. But these have become so routine and relaxed that they seem to be often just a “nuisance”, which agencies often ignore, bypass, get “ex-post-facto”, or just “rubberstamp” away.

There are plenty of instances where the government has abused their power and violated the privacy of individuals with very little or no reasonable cause. National and local agencies; fiddled through the social media accounts of countless protestors and protest organizers during the Black Lives Matters protests of 2020. To crack down or disrupt their constitutionally protected actions, the right of assembly, petition, and free speech. [*]. In the 1960s, Martin Luther King Jr. and Malcom-X, were spied-on repeatedly by state and national agencies, based on fabricated and exaggerated suspicions. [*]. And police and other agencies often finger-through social media pages as well as “discarded” pieces of mail, from individuals that are “targeted” for surveillance. Often based on their affiliations, and religion, race, ethnicity, nationality, or sexual orientation. [*][*].

Recently, police in Atlanta Georgia spied on protestors against Cop City; the planned police facility that threatens the community and a local forest and conducted deadly raids against them using the intelligence gathered through clear violations of privacy and other constitutionally protected rights. [*][*]. Cop City is believed to be ultimately utilized for further militarization and surveillance of the region and is believed to harm the forest environment and the nearby communities in which it may be built.

Reclaim your lost privacy

A mentality of efficiency begins to work on awareness and value for privacy. Efficiency is generally unwelcomed in the often-wasteful cities and rejected by those living a so-called “normal life” there. You will likely *want* to remain private because of this likely rejection. There may be cases where your safety may be threatened by authorities and angry violent neighbors; simply because of your unusual lifestyle; however helpful it may be for you and the world. Working yourself free from the grid may not stop disconnecting your utility services and getting out of debt. It will likely extend into freeing yourself from other types of abusive control and the constant surveillance present today.

Again, you should be afforded reasonable privacy as long as you are a law-abiding and reasonable citizen. And, your human and constitutional rights should be respected. Your society should not “keep tabs” on you and surveil you “just in case you step out of line” or because they unreasonably “suspect you of wrongdoing”. You should be free of unreasonable suspicion, because otherwise you will remain in a “child and parent” relationship with a seriously flawed government and society. Those that may erroneously strike; due to a litany of possible biases and discriminatory assumptions. And, such a government and society may choose to suppress anything that they deem a “threat”, although it may be perfectly legal, safe and reasonable to most.

While living off the grid, or making efforts for it, you may notice the ways in which you are surveilled and controlled by companies and the government. But, you may begin to take steps to get rid of those things that enable such surveillance and control. For example, an identification card, ID, is a representation of an affiliation with an entity, and a certain degree of commitment and control given to that entity. A state ID is affiliated with that state, and the fact that the state issues to you so it has many of your updated personal identifiable information. This information is kept by the state to maintain a certain amount of control over you. They generally know where to find you, know your looks and other identifying biological and social data. Through your ID, the state may keep tabs on encounters you’ve had with law-enforcement; big purchases you’ve made; jobs you have had; and any transaction where your state ID was verified. These records can be used to create a dossier, which - again - gives the state certain power and control over you.

Most of us are “highly encouraged”, even forced, to enter this relationship with our states of residence, by exchanging that control for things like the ability to drive, rent an apartment, or apply for benefits or employment. You may ask “what control can the state have over me? “I feel free to do as I please as long as it is not illegal”. This argument is naive and erroneous; in that the state highly encourages you to work and pay taxes and engage in all of the economic activities that generate -that state- wealth. Such as purchasing food and fuel, paying rent or mortgage, and countless other *paid* activities. If that’s not “control”, I’m not sure what it is. These may only seem like free actions, to pay for just about everything, especially if you have lived in such an environment your entire life. But, paying for everything is far from natural, as you have little or no choice but pay. This, to me, is clear evidence of manipulation and control by a series of artificial factors.

You may choose to minimize or sever your commitment to any entity which controls you in any way, such as clubs, societies, communities, associations, or even your government. Especially if the “benefits” you have exchanged for that control are wholly inadequate. For this, you may begin with simple accessible steps. For example, choose to turn off your GPS location service of your smartphone, to limit the surveillance by big tech and their countless apps on their platforms. You may also turn off

your big tech affiliations and services altogether and have them stop the tracking and surveillance of your online and real-world activities. You may also “strongly petition” your local government; to take down surveillance cameras in your community, or alternatively, ask them to provide absolute transparency in their surveillance activities. Alternatively, you may protest this type of surveillance. These and more, are ways to begin to take control of your life, while off the grid, and to claim and maintain your deserved and rightful privacy.

Section 08

Preparedness – part 1

Introduction

To be prepared is simply to be as ready as reasonably possible for expected events. Expected events could be categorized between likely and unlikely, or common and extremely rare. There are two types of events I'll discuss in the context of living off the grid; crises and catastrophes. I believe that being off the grid prepares you to "better survive", and better cope, with crises and catastrophes. This is because, often during crises or catastrophes, the 'normal' utility services and food supplies may be severely disrupted or even stopped; temporarily or indefinitely. Although living off the grid is not a guarantee to having all that you need during these events; it is likely to help you have "powerful defenses" against an event's harmful effects. Since each event brings different effects and challenges; I will discuss each expected event as to the challenges they may bring, and I'll explain how off grid living may help.

Crisis Preparedness

Crises are expected and unexpected detrimental events that bring partial disruptions to existing working systems and services; such as food, transportation, water service, electric service, etc. Crisis may cause a short or long term disruption to these, or even incapacitate the system, or severely dismantle it. The system may slow down or halt, even if it remains mostly physically intact. This can occur due to a variety of factors that may block or limit its normal operation. These factors may be one or a combination of many, like unemployment, under employment, and low liquidity . Low liquidity is the scarce access to money due to over-inflation, scarcity of goods, and more. Crises discussed here will include human-caused, such as financial, social, climate, and political crises. And, naturally occurring: storms, floods, earthquakes, etc.

Human-caused crises

Financial crises

Financial crises, in the context of living off the grid, come from the cyclic temporary "ups and downs" of an area's overall economy. Sometimes these down-cycles may be severe-enough and trigger a crisis. Financial or economic crises may affect water, food, shelter, and other goods and services; especially when unemployment and the scarcity of money impact those industries. In turn, there may be scarcity in the goods and services available to you. At the same time, you may be impacted by unemployment or lack of money; and you may temporarily lose access to those goods and services.

In my lifetime, here in the US, I've lived through a few major financial crises, but there have been many throughout history, some of which have been severe. [*]. Some have been extremely severe, which have expanded world-wide. The most infamous of all is, perhaps, the Great Depression of 1929, whose effects lasted about 10 years and many argued ushered conditions for world war. During that time, the U.S. stock market crashed, and unemployment reached 20% at its peak [*]. Its economic effects spread throughout the world. Other large economic crises include the early 1980s recession [*], savings and loan crisis of 1986 [*], the special period in Cuba in 1991 [*], the Russian financial crisis of 1998 [*], and

the Argentine great depression of 1998 [*]. In the US, I recall hearing about The Dot-com bubble of 2000 [*], and living through the great recession of 2007-2008 [*]. During this recession, there was widespread unemployment, peaking at 11%. And, there were especially-deep losses in financial and property assets. I, along with millions of others, were affected by the home mortgage crisis which accompanied the recession. Recently, Venezuela has gone through a deep economic crisis since 2012, [*] and the world entered into a recession of varying severity since the beginning of the 2019 pandemic. As I write this, here in the US; the post-pandemic economic crisis remains for most Americans [*]; with severe inflation in many critical markets like food, fuel, transportation, and many others.

Needless to say, financial crises are not just graphs and numbers on a screen somewhere with no effect, they are materially-harmful to people living in our money-dependent society. A financial crisis may slow or stop your employment and monetary income; may diminish your investment or retirement account balances; may make food and utility prices too high for you to afford; and more. Some financial crises have caused the stress and suffering of millions of people, and have even contributed to the death of many, for extended periods.

Living off the grid empowers you to be less dependent on your local, national, and international monetary economy. Although you may not choose to “completely exit” this economy; living off the grid provides a “buffer zone” between the economy and you, so that in case of a crisis the effects are dampened. For example, if you are debt-free, and rely on only a small income because you don’t have any ‘bills’, then, a financial crisis that affects employment may affect you minimally. In contrast, someone with much debt, living a high-cost lifestyle; and may lose many of their indebted property. In many cases people may lose a home, a vehicle, access to food, healthcare, etc. For example, during the 2007-2008 great recession, I lost my home due to a combination of low local immigrant wages, and over 50% loss of home value. And my lender, the bank, did not want to renegotiate the extremely-bloated mortgage loan. This is despite my many pleas by phone and in writing. And this is after the federal “bail out” that banks received. Then, many had a big mortgage loan, a precarious income, and not enough income. To no surprise, immigrant and black communities were hit the hardest. For example, when I lost my income in 2006, I had to move away from the area, mainly due to low prospects of fair wages and employment, and eventually abandoned my home.

A tangible example of how living off grid provides a buffer during a financial crisis is having solar energy equipment. It may get rid of your electric bill, allow you to allocate more funds for savings, and allow you to need less money. Another example is living efficiently. Living off grid encourages you to increasingly live “within your means”, better manage your finances, save more, and pay less for everyday items. And, the increased efficiency, skill, and knowledge of off-gridders; surely contributes to their resiliency to financial crises. Also, as mentioned elsewhere, by becoming more ingenious, resourceful, and skilled; you become a more valuable employee, business administrator, or contributor in just about any place or situation.

I believe producing food off the grid helps you financially. This is in various degrees, depending on your food producing capacity. It surely would help in the event of food shortages or food price runaway inflation, such as the current one. Just recently, the prices of hen eggs were “runaway”, and those who had egg laying hens were at an obvious economic advantage. During that time, in some areas the prices of eggs almost tripled within a short period, and prices remained about 60% above-average for several

weeks nation-wide. [*]. During this time, many neighbors in my area suddenly sold chicken eggs from their backyards.

Harnessing drinking water can surely help during economic crises, especially where water may become scarce. As you may know, bottled water is increasingly popular, with many people opting to consume mostly bottled water during their day. Economic crisis may impact delivery of water to supermarkets and other stores, and impact access to that need dearly. Harnessing, processing, and storing water are central pieces of living off the grid, and these can provide weeks to months of clean water supply. This water supply can help you remain healthy, even if a severe economic crisis hits, impacting drinking water availability.

Economic crises may impact electrical power and other utility services like natural gas. These may be brownouts -short temporary electricity outages-, blackouts (long term electricity outages), and utility gas outages. These may be offset, or alleviated, by off-grid technologies like alternative energy systems (solar, wind, generators) and storage systems such as batteries and liquid propane gas tanks. You may use renewable generators -solar or wind- to refill your storage -batteries- and keep some or all of your electrical appliances and devices running during brownouts or blackouts. You may be completely off the electric or gas grid when your community experiences brownouts or blackouts; hardly noticing the occurrence.

In short, an efficient lifestyle, expanded self-sufficiency skills and knowledge, and off grid technologies will surely help you alleviate, or even ward off, the negative impacts of a financial crisis. And I believe this is a great reason to want to be off the grid.

Social crises

Social crises may take many forms, and do happen quite often in modern society. Dissatisfaction with governments, laws, the economy, or social restrictions; may trigger people to stop working and take to the streets in protest or riots. Protests are peaceful, while riots are more disrupting and sometimes violent. During protests and riots; there may be physical and violent clashes among opposing groups, like different factions of civilians or between factions and police. During social crises; the normal productive and distribution routines of society may slow down or stop. This may mean shortages of goods and services, and disruptions of work which may postpone or stop monetary income.

A notable and recent social crisis occurred during the summer of 2020; the Black Lives Matter -BLM- protests. During this time millions of people across many areas took to the streets to demand change to a world system that systematically and routinely discriminates against and denies justice for peoples of African descent. This crisis was triggered by the murder of the American citizen, George Floyd. Unfortunately, many local, state, and federal “authorities” responded violently to these protests; and many public clashes, violence, and destruction occurred. And, combined with the effects of the ongoing pandemic, the social effects of the protests were surely augmented.

Further back, in 1980, The African-American communities of Miami Florida, erupted in protests and riots after Arthur McDuffie. McDuffie was an unarmed motorist, who was brutally beaten and killed by four police officers. The officers involved were eventually charged. The controversial trial was moved from Miami to Tampa, an unusual move believed to be racially motivated, done for the benefit of the officers. Ultimately, all four of the accused officers were acquitted of any charges. [*].

Personally, so far, I have lived through a few social crises, here in the US. In 1992, the Los Angeles riots were triggered by the brutal beating of Rodney King. The brutal attack was seen as unjustified and was video-taped, causing outrage, largely in the black communities of this racist nation. The subsequent acquittal of all officers, involved in the blatant abuse, caused social unrest and protests in many areas of the US. Some were reported as riots. [*].

In the spring of 2000, in South Florida; there was a short term public crisis during the Elian Gonzales custody dispute. During this time, outrage erupted in the Cuban-American communities of South Florida; caused by the dispute over the custody, and forcible seizure of; the toddler Cuban boy whose mother had drowned while migrating to the US in 1999. [*]. Although there were threats of widespread turmoil in the streets, in the aftermath of the dramatic raid to seize the child, the threats did not materialize and tensions waned within days. There have been many riots in America, mostly driven by racism, and discrimination based on protected statuses. Just to name a few: The Cairo Illinois -race- riots of 1967-1973 [*]; The Martin Luther-King assassination protests [*]; and many others happened all across the world.

During many of these crises, and many others not listed here; businesses were closed, property was damaged, fires erupted, traffic was stopped, people were jailed, and some were injured or killed. These crises can affect entire nations, regions, communities, or specific groups; to various degrees. For example, if your business or home is set ablaze, or if you are jailed and lose your job, during a protest or riot; will surely impact your physical and financial situation. More importantly, access to basics such as water, food and shelter may be affected during -or in the aftermath- of a social crisis.

Living off the grid largely isolates you from the effects of social crisis. Mainly by allowing you to remain away from the crisis, and being prepared for it in many ways. For example, off gridders will likely choose to live away from overcrowded areas; produce a significant portion of their food; and have water and long-shelf-life food stored. Due to this preparedness, off-gridders may be able to “wait-out” a social crisis; by remaining in their home for however long the crisis occurs. Also, if you have little or no debt, bills, or financial commitments; then you may be able to cope with less or no income; for the duration of a social crisis. And, if the social crisis affects utility services like water, gas, and electricity, you may be able to cope with this by relying on your own services “off the grid”. The “normal” methods of communications, like land lines or cellular telephone, may be disrupted during severe social crises. Fires or vandalism may cause damage to telephone and cellular infrastructure, and “knock out” these services. If you are “off the grid” for communications, your service should not depend on any physical infrastructure outside of your home or yard. So, unless your home has been affected directly by the social crisis; you may be able to communicate using various wireless “end-to-end” equipment. More on this later.

Political crises

Our world maintains much of its order and peace through government. Most nations have agreed that government is beneficial and necessary for a variety of reasons. But, governments gradually, or suddenly, become corrupt, despotic, authoritarian and abusive. The government may also weaken; to where other institutions control much of that society. Cartels and powerful families may hold more power than the government in certain areas or nations. In less democratic societies, suddenly, there may be a power struggle within the government. When any of these detrimental situations arise, with the government, a political crisis may occur. Political crises may include: widespread dissatisfaction and

unrest, protests, riots, labor strikes, and street violence. Even in free and democratic societies, political crises may be triggered by outraged voters, especially if instigated by “demagogue leaders”, and real or perceived fraud during or after elections. This crisis occurred in the US on January 6 of 2021 in Washington DC. More on this later. Also, Martial law may trigger a political crisis. Martial law is when the government and authorities require strict curfews and other restrictions. This has occurred in specific areas, generally comprised of large “minority groups”, and has been contemplated nationwide several times in history. Again, martial law has been enforced, for short periods, in several instances. [*].

The effects of political crises may bring social and utility services shortages or stoppages. Water, food, healthcare, education, and utility services may slow-down or halt completely. Businesses may close, or be damaged, affecting the income of many. Government offices may slow down or halt services, and things like government run utilities, -water, energy, gas- may be severely affected. The government may even close; due to budget and staffing problems. For example, local governments may not have enough funds or credit to keep city services running normally, and may even stop vital services like water. Often, the first services to be affected are the ones that help the poorest and most vulnerable people. Such as food aid and employment compensations. For example, the Georgia (USA) unemployment and food aid offices; closed for several months “during the thick” of the Covid-19 pandemic, in 2020. And payments and benefits were severely disrupted for tens of thousands of needy families in the state. All state aid offices were shut. And I recall being unable to reach the unemployment office by phone. I experienced this after applying for unemployment benefits, after I was fired from an employer in the fall of 2020. Later, about 6 months after applying, I received a “rejection letter”, filled with errors and untrue statements; proving to me, the uselessness of this state agency.

A recent political crisis, with potential national implications, was the insurrection of January 6, 2021. Here, a mob of thousands of dissatisfied and violent political fanatics stormed the US Capitol, and used violent attacks to try to disrupt and stop the congressional certification of the newly elected opposition president. Order was luckily restored; arguably because the mob was not large-enough, and a last-minute call from the looser president to “go home”. I believe, had the mob had their way, there would be a despotic installed president as I write this.

Other dire political crises have occurred around the world. Recently, a political crisis in Sudan has contributed to the displacement of millions of people in that nation. [*]. Syria and Somalia continue to suffer from decades of political and humanitarian crises, with tens of millions of people affected. [*]. The nation of Myanmar has seen political and humanitarian crises develop into violence in recent years, affecting over 10 million people and directly displacing over 200,000. [*]. Political instability and violence have affected many areas of Nigeria. There, currently, about 1 million people live in “inaccessible” and “conflict-affected areas”. [*]. At times, political crises have fallen into “all-out war”, and ushered “modern-day famines” such as the one in Yemen. There, over 20 million people are in dire need as I write this. [*].

Furthermore, countless short-term political crises have occurred throughout the world, and will continue to occur, perhaps often and for the foreseeable future, affecting the needs and lives of many people. Living off the grid has clear benefits in preventing and alleviating the ill effects of political crises. There’s many ways in which a political crisis may affect people. But, we can all agree that political crises may bring scarcity, shortages, or stoppages of public and private goods and services. And, obviously, if you depend less on those public or private goods and services; you will be less affected if and when they

slow down or stop. For example, a political crisis may affect your income by disrupting your ability to work or by shutting down your place of work. Or, if the government stops, this may stop your income if you are a government employee, or if you supply a good or service to the government.

In summary, when you don't have debt, bills, or excessive costs of living; you may weather a political crisis much better. Additionally, living an efficient lifestyle lengthens the time you may live without the goods and services from the "outside world". Your ability to remain isolated from the outside world, and extend that isolation period by generating and utilizing off grid goods and services, are the off-grid abilities that may help you weather a political crisis. And, you may help others do the same; by allowing them to use your off-grid goods and services or by sharing your methods and technology.

Nature-caused crises

Climate crisis

Climate events such as floods, droughts, storms, and prolonged extreme temperatures may affect local and regional goods and services. A tornado may destroy a small town's only supermarket, cutting the food supply for thousands of people. A flood may close gas stations of an entire city; rendering citizens impotent to use their internal combustion engine (ICE) vehicles for long. A drought may impose restrictions on water use, and cause local water sources to "dry up".

In the context of living off the grid, when a climate-related event causes a disruption in the needs of people, we have a climate crisis. Long term or cyclic climate crises; may trigger mass migrations from one area to another; potentially causing a temporary or extended over-population crisis in areas receiving "climate migrants". Climate-related events may also directly affect many people's needs and services. For example, a severe storm may "knock out" electric infrastructure and service for days to months. And, floods may contaminate the utility water supply for days to months as well. Furthermore, flood or drought may affect farming and crops of an entire region.

It may be difficult to escape the effects of climate crises even if you are off the grid. But, being off the grid may, at least, help you cope with the effects much better. In some cases, it may help you avoid them altogether. Of course, each climate related event has different effects and challenges. And, living off the grid may help in different ways and depending on the nature of the event or crisis. So, here will discuss a few crises caused by natural events, which are likely exacerbated by the climate-crisis. Then, will discuss their possible effects and off grid benefits.

Storms

Storms come in many types: Tropical storms such as hurricanes, typhoons or cyclones; tornadoes; and winter storms -snow blizzards-. Again, these may bring destruction to infrastructure, crops, structures, and bring direct harm to people, animals, and plants. Also, these may bring other follow up crises such as floods, mud slides, lengthy snow cover, or drought. Consequently these can bring crop failures, blockage of roads, and contamination of water supply.

As mentioned; storms are thought to be made worse by the effects of climate change, by climate experts. They are made more frequent, and more severe. The heat stored in the seas and the

atmosphere, through global warming, are thought to be major factors contributing to alarming trends of storm severity.

Tropical storms

Tropical storms happen in vast areas of the world. Tropical storms generally form and affect areas near the tropics -the vast belt around the widest diameter of the earth, -the equator- stretching north and south each to about 23 degrees of latitude). In perspective, the tropics cover from near Havana Cuba to Sao Paulo Brazil. This “belt” slowly changes position with the yearly wobble of the earth, slowly drifting north then back south once per year. [*]. Once formed, tropical storms may wander in any direction, including way outside of the tropics. Tropical storms may pack massive power, in the form of rain and wind, with wind speed ranging from 63 kilometers per hour -kph- to 119 kph; at this wind speed it is called a hurricane or cyclone. Tropical storms vary in the rainfall they gather. Some may harness and unleash unbelievable amounts of water in the form of rainfall. Depending on the track and the speed of these storms, this can bring significant to catastrophic flooding, to be discussed momentarily.

Additionally, storms may affect electrical power with damaging winds or floods. But the electrical company may shut down power to affected areas to prevent fires, electrocution, or other damage; to electric infrastructure or other property. Electricity outages may last from days to weeks in the aftermath of a storm. Living off the grid may insulate you from the effects of power outages; simply because you may generate “your own” electricity, using solar or wind energy equipment. Following a power outage; you may have to do with less energy, and cut back on your consumption. Especially so if you were not already 100% off the electrical grid. And, if only because sunlight or wind may be scarce after a storm. Also, food and water may become scarce in the aftermath of a storm, due to destruction, debris, flooding, electricity outages, and other factors.

Hurricanes -Typhoons or Cyclones- are stronger than types of tropical storms. And, they can also wander far from the tropics, just like tropical storms. Hurricanes wind speeds range from 119 kph -75 mph- and up. Winds can reach upwards of 200 mph! Which are extremely destructive and can spawn other types of extremely destructive phenomena like tornadoes. Hurricanes bring the same types of effects as storms, just more intense, longer lasting and more severe. For example, hurricane type storms may knock out electric power for many weeks in “hard hit areas”. At times longer; if the area is remote or there is little political interest in getting services restored there. I vividly recall the aftermath of 2 hurricanes in south Florida; Andrew in 1992, and Katrina in 2005. They both brought massive electric power outages, food, fuel, and water disruptions; to vast areas of South Florida. Especially in poor and marginalized areas where many immigrants, minorities, and low income residents lived. There, seemingly, help arrived last; and goods and services were restored only after other “affluent areas” were restored with services. I recall being without electricity for over 2 weeks, in our areas, both in 1992 and 2005. There, flooding of the fragile infrastructures that supply densely populated areas; heavy dependence on corporate-government, and the corporate addiction to profits; among other factors; likely contributed to the severe energy and services disruptions I witnessed. These massive disruptions are often caused by seemingly *relatively* minor and localized damage; caused by storms. Some of the costliest hurricanes in history have occurred in recent memory. Hurricane Katrina in 2005, with $153.8 billion in estimated damages; Maria (2017; $109 billion [*]); Sandy (2012, $67.7 billion); Andrew (1992, $46.2 billion); Ike (2008; $33.3 billion); Ivan (2004; 26 billion); Wilma (2005; 23.4 billion); Rita (2005: $22.8 billion); Charley (2004, $21 billion) [*].

Tornadoes are a type of very destructive and short lived storm. They are extremely powerful vortexes of wind that can reach speeds of over 241 kph -150 mph-. Tornadoes pack a lot of destructive power, over a relatively small area, because they are generally compact and short lived. But, some large tornadoes may be over half a mile wide and travel over 10 miles!

Having stored water will benefit the off-gridder during and after a storm. A storm will bring very little change to safely collecting rain water. Although, during the worst of the storm, there may be violent and windy rainfall; this period should be relatively short lived. If you harness water from a body of water, this too may be affected by the storm. Contamination by dirt, debris, and chemicals is possible since the winds and flooding may carry all sorts of stuff into ponds, lakes, and rivers. Underground water is probably the safest source, since contamination, during a storm, is far less likely. If your water-filtering equipment remains intact, ground water may be used during and after a storm.

Having solar photovoltaic equipment for off-grid electric power sources is surely the optimal way to avoid disruptions of electricity service during and after a storm. This is especially true in the tropics. Solar energy is quiet, relatively cheap -when compared to fuel generators-, and it is dependable. The tropics are generally sunny, and renewable charge is plentiful with photovoltaics, especially when using capable batteries.

If you are off the food grid to any degree, it can help you survive, sustain, and thrive during and after the storm. Stored food will likely play a large role in how you do during a storm, because the wind damage and possible flooding may have affected your ability to produce food locally. Survival food storage is an essential part of living off the grid as you'll see in a later section.

The ability to maintain communications may be among the most notable differences between those off the grid and those tied to the grid; during and after a storm. Storms may render utility communication unusable for days to weeks; after a storm. Even cellular phone communications may be interrupted due to damage to cellular phone towers and or stations. After a storm, If you are off the grid in your communications, you may freely communicate with emergency services and even aid in rescue or advisory operations. You may communicate with other off-gridders, including family and friends, using end-to-end radio equipment. Also, you may listen to weather and conditions reports, during or on the aftermath of the storm, and be a source of updated information for those that are effectively "incommunicado".

If your neighborhood or community is struck by one or more severe tornadoes, the destruction and devastation may be overwhelming; even to those off the grid. There may be "little else", of material and technological value, to help you live through the aftermath of damage from a tornado. Those that survive the direct impact will surely benefit from the off grid lifestyle, if only through their resourcefulness and efficiency. But, benefits may come from stored goods and self services.

Floods

Storms and heavy rain may usher floods. Also, a flood may occur even in areas where there has been little or no rain; due to the overflowing of a river, lake or the failure of a dam. Floods are especially destructive and deadly due to the nature of water. Water can quickly fill every empty space, run with incredible power, and carry even the heaviest objects by buoyancy. Even a home could be "uprooted" from its foundation and transported by a large flood. People, plants and animals may drown, be injured

or killed in the wreckage of a flood. Many properties will suffer permanent damage when submerged in water during a flood. Floods may happen often or rarely depending on your geographic location and many other factors, such as nearby bodies of water average; yearly amount of rainfall; types of soil and vegetation; etc. These affect the likelihood and destructiveness of floods. Most experts believe that floods have become more frequent in recent decades, and studies have shown that to be among the effects of climate change [*].

Floods can readily bring normal life to a halt. Water, food, electricity, and communications may all be affected by a flood. Water may become contaminated. Or, access to water may be cut off, or your movement may be restricted by water; sometimes for a long period. I recall in the early 2010's central Georgia -US- received a massive amount of rain, and some homes were "cut off" from the 'outside world' by water. They became islands, with the only safe way, in and out of them, being through a boat ride. In such situations, your food and drinking water supply, and access to medicine and healthcare; may be cut off indefinitely or at least become difficult. Damage from storms that bring floods may oftentimes affect electrical and communication services. During a flooding event, these services are likely "turned off" for electrical hazard safety or to prevent further damage to infrastructure. You may be without electricity or communication services from hours to many days after the storm.

Living off the grid may provide relief and safety in the event of a flood. Of course, this is dependent on many other factors and how extensively you are "off the grid". Again, stored water and food especially; will surely alleviate any shortages caused by a flood. If you have access to ground water, a flood may not affect this source. However, your ability to filter and treat water may be affected if your filtering equipment was flooded. For example, if you have water treatment equipment in your yard, this area may be flooded and the equipment may be damaged. Of course placing this equipment in 'high ground' would be optimal, but is not always an option.

Food production and distribution will surely be affected by a widespread flood. Food scarcity may plague your area for long periods. Access to food and medicine may become "cut off", difficult or even dangerous. Again, off-gridders may offset these effects with stored foods and medicines. If you happen to grow your food and this ability has remained intact during the flood; you may be able to feed yourself and others in the aftermath of the flood. But, consider that ground-level food production is likely to be affected by floods.

Off-gridders will surely benefit from producing their own electricity and communication services. You may be able to continue producing these safely during and after a flood event; as long as the equipment remains undamaged -not flooded-. Solar PV has the advantage that; most equipment can be installed on the roof and apart from extreme flooding. This equipment is likely to remain out of water and working, unless a catastrophic flood occurs. Other energy producing equipment, like outdoor fueled generators, battery banks, propane tanks, and wind turbines may be affected by flooding to various degrees. There may be flooding instances where turning all energy producing equipment is necessary for safety. Generally, if it generates electricity and is in contact with water; it should remain off. As an off-gridder you should be prepared to live without electricity for extended periods. If health conditions require some electricity, the use of stored energy such as batteries; is recommended.

Utility communications may be affected by flooding. Telephone poles may have been "knocked-out" by storm winds or softened soil from flooding. Or, cellular tower or station equipment may be underwater or damaged by the wind. Here, off-gridders may be able to communicate with their end-to-end radio

equipment. As there is no need for utility owned antennas or stations. Radio communication is rarely disrupted by flooding as equipment and antennas are largely installed well off the ground. Again, amateur radio operators often aid in communication efforts during crises due to this advantage.

Droughts

Droughts are prolonged periods of dry weather lacking rain. Rain provides a cycle of water from bodies of water and the ground, to the air and back to the ground. This engine-like process provides vital and countless benefits to all living things. When this cycle slows, or stalls, there is generally destruction of habitats, many plants die off, and animals migrate, adapt, or may perish. During a drought, crops could yield low or no fruit. And, water may become scarce, and costly.

Crises-causing droughts happen all the time, all over the world. Rain patterns change due to many factors, in the atmosphere and the seas. El Niño and La Niña events, in the Pacific, are examples of how sea events affect weather in vast areas, globally. [*]. Crises caused by droughts could be mild or severe; depending on many factors. Your area may experience a short period of dry weather lasting weeks; or an excruciating period of no rain and dry weather; lasting months. Here, in Middle Georgia, droughts are rare, and a few weeks of no rain is very detrimental for the many farming-dependent communities of the region. So, here, a period of 3 weeks without rain could bring large losses to some farmers, thus a crisis. Of course the longer the drought, the larger the crisis; generally. I recall a period of drought in this area, around 2016, when even mature trees began to dry up and die. Luckily, I had stored rain water, and this helped me keep my many trees, especially large pines; alive by irrigating them with the stored rain water.

Droughts could affect people on the grid by making utility water scarce, inconvenient, expensive, and even inaccessible. During droughts your local 'authorities' may demand you to conserve water; they may demand higher prices for water service; or both. Demands to conserve water are usually made for residential users, perhaps so that commercial and farming users can "keep-on-trucking" with their high water use. I know, first hand, that these farming industries are protected by the government, and they use most of the fresh water. Further, they are given 'priority' because they are considered 'producers' for municipalities. I suspect "race" has a lot to do with this protection. Furthermore, many municipalities have 'private' water service companies, which are looking to make a profit from their 'service'. So, any 'threat' to their 'bottom-line' will be offset; likely by 'gouging' service prices. This practice is well documented. [*]. Lastly, droughts may impact those living in poverty, and in remote areas the most. And those living in areas of conflict; even more severely. To summarize, as many municipalities may be easily overwhelmed by climate events; I believe that everyone, especially those in dire situations, may benefit greatly from being off the utility water grid.

During a drought, "off-gridders" may keep their water use; unabated. They may use their reserves or continue to extract and use ground water. They generally would not need to follow any restrictions on utility water, simply because they would not be "connected" to, or would not be using; utility water. An example may be; If "off-gridders" depend on a body of water or the rain for their water source, during a drought, the body of water may be running low or even drying up. In such a case, off-grinders would need to depend on stored water until the rain returns. This may be accomplished in several ways. Without delving into much details; water access, transport, and storage technologies would be employed. Water sources to be "tapped" include: ground, rain, or body of water sources. Details on these methods and technologies are to be included in book 2.

A drought may affect fresh food supplies because your area's crops may be flooded and fail. This is especially true if you depend on local food products. Villages, tribes, and remote towns may have this dependency. During a drought, you may benefit from living off the grid, especially if you produce a significant portion of your food, and your producing ability has not been impacted by the drought. For example if you have stored water for irrigation, and if you use ground water whose supply was not impacted by the drought. Again, rural and remote areas may be more affected by droughts; since larger cities may import much of their food supplies from many and far away places. If the drought affects a very large area, the food prices will likely hike, especially in the areas supplied by the affected farms. Those "off the grid" may save money and even provide food stuffs to themselves and others as much as possible. Details on how this is possible are discussed elsewhere.

A drought may affect utility electrical power production, especially if your region depends on hydro-electric energy, which uses a dam. The water level on the reservoir of the dam may be too low to generate enough electricity for the area of service, and rolling brownouts or blackouts may be scheduled to offset this energy shortage. Of course, off-gridders may bypass these outages if they do not rely on utility electricity. A drought generally helps solar energy, as there is generally more available sunlight and less cloud cover during droughts. Wind turbines may not be affected by droughts, although they may, if winds become scarce. Those using other alternative energy technologies will surely benefit in the same manner; during and after droughts.

Naturally, droughts may bring a higher risk of fires; both wild and human-caused. Lack of moisture contributes to more dry and combustible materials, ready to burn in the forests and towns. Of course, uncontrolled fires may threaten human and animal life, and create a local or even regional crisis. Destruction of all sorts of utility infrastructure, industrial infrastructure, farming land and its infrastructure, and homes; may all be affected-by and contribute-to the crisis. Shortages of utility-water, electricity, food, and access to communication; may arise in the aftermath of fires. Those living off the grid may benefit greatly by their lower- or non-dependence on the utilities, food, or fossil-fuels. Additionally, fires may block access to many goods and services, for indefinite amounts of time, by blocking roads, bridges, or otherwise shutting down transportation. As you may expect by now: stored water, food, and energy; may serve the off-gridder greatly during this time.

Heat wave

Heat waves are prolonged periods of intense and unusual atmospheric and water high temperatures. If inhabitants of an area not accustomed to experience high temperatures, a heat wave; they may suffer, become ill, and sometimes perish.

There are heat waves occurring in many areas of the world, even in normally temperate zones like the far North and South regions of America, North Europe, North Asia, and Oceania. Higher than normal temperatures also often occur within the tropics. Crisis-causing heat waves are too many to list here, [*] but notable ones include: The European heat wave of 2003; The Siberian heat wave in July of 2020; and the Argentinian heat wave of December of 2022. [*]. Many of the larger known heat waves are catastrophic (discussed later), while smaller crisis-causing heat waves often go unreported.

Heat waves may affect water availability because of drought conditions which may accompany the heat wave. Bodies of water may run low or dry. For this, food may be affected by heat waves due to its impacts on water and air temperature; for crops and farming. Grid tied utilities may be affected, as

mostly all depend on utility water, electricity and communications. These utilities may be sourced in hydroelectric plants, which may struggle “to keep up with demand” due to low water level in their reservoirs. Heat waves may especially impact the electrical utilities, because energy use may likely “surge”, as the pampered “on-grid people” use large amounts of energy using their air conditioners and more; for longer periods. As a result; there may be brownouts or blackouts, exposing many to temperatures which may be unbearable for the very-young, old, unprepared, ignorant, and fragile. Furthermore, the scarcity of water and food may also impact water and food prices. And those near or under poverty may suffer a range of problems due to inaccessibility. Heat may impact the overall economy, from labor shortages; power outages; to commercial and industrial closures.

The healthy human body may be able to cope with moderately-high ambient heat, even above 35 degrees Celsius. Depending on the heat index, the body may handle heat above that. However, many factors can impact our health during high heat: your age and overall health; hydration level; ambient humidity; level of body exertion; stress level; exposure to heat sources; dress; and others. But, high heat may cause heat illness and heat stroke. It may even lead to death in some individuals. So, high heat conditions should be avoided. Living off the grid offers a variety of methods and technologies to help you remain healthy and maintain a healthy ambient temperature even during high heat events. Many of these technologies and methods which do not rely on electrical energy. Of course, with use of solar photovoltaics, you may run cooling technologies like area fans and air conditioners using some energy. But, you may also keep cool by building and using smart architecture that utilizes natural shade, wind, and light. Book 2 will delve into “smart architecture”, that is highly efficient, and dependent on natural cycles.

The first shield against the effects of high heat is your mind. You must let go of the overly pampered habit of having air conditioners on; no matter the weather conditions. A bit of sweat won’t kill you. And, 28 degrees is not “too hot”. You must expect, and be prepared for, high heat, especially if it is possible in your area. At times, heat is experienced even in the arctic, so most inhabited parts of the world should expect it at least part of the year. With this in mind, you should plan your methods, technologies, and equip your home for high heat events. First, you may plant shade trees near your home, to help keep it cool using shading. Second, have large windows, on opposite sides of your area’s prevailing winds, for your home. This will keep your home ventilated and cool, with reduced need for electricity. Third, make use of fans, and icebox air conditioners if necessary. These will be explained in Book 2. Many other methods and technologies exist, new and old, to escape the heat. But, you must be committed to an efficient and smart lifestyle, so you still save energy and funds, even during heat waves. With these, you may be more resilient during the high heat events, which are surely to occur more often due to global warming.

You may use your water reserves during a drought high heat event. With it, you may keep hydrated and cool. Ground water may be available during high heat, although surface bodies of water may run low or dry during extended high heat and drought events. So, prior to expected periods of high heat, an increased water reserve is recommended. Water may be used to power icebox air conditioners and water mist (water vapor) fans. Furthermore, water is needed in the event of a heat related illness or stroke, so have it ready and be prepared to use it.

After a possible decrease in food supplies due to heat; the off-gridder may be able to keep producing food using her or his resilient water sources or reserves. Plants and animals need water, so food

production can benefit from these resilient off grid sources of water. During high heat events sunlight will likely not be a problem, but too much of it may damage plants and stress or harm animals. Again, using smart architecture, you may ward off excess sunlight. Solar panels may provide shade and keep sun light entering an area if spaced out accordingly. So, you may grow plants and animals while providing shade in an area with excess sunlight using solar energy; and produce electrical energy.

Solar photovoltaic may be the first choice for relief during high heat events, again, because high sun light is likely during these. Solar modules easily absorb and reflect much of the radiation that cause ground and ambient heat. Installing these in roofs, patios, or other open area; readily provide shade with various levels of light depending on spacing. Other off grid technologies may provide relief during high heat, like solar thermal collectors; heat reflectors; solar cookers; solar water heaters; and more. Old technologies like solar refrigeration may be brought back to life by ingenious off-gridders. Many technologies that can be run with batteries exist to fight the heat. Battery fans, air conditioners, and ventilators may be used, employing renewable energy; like solar.

Due to brownouts and blackouts; utility communications may fail. Off-gridders may "step-in" and use an array of technologies operated by batteries and renewables. You may communicate via radio, satellite, and even land line or cellular telephone; using off grid technologies.

Earthquakes

Among the most feared natural processes are earthquakes. When the stability of the ground you stand fails, it is a feeling to never forget. You see, we live riding on huge tectonic plates, which are basically huge sections of rock floating on molten material deep in the earth's crust. These plates move about and are slowly "recycled" back into the center of the earth. As this recycling happens, earthquakes are sometimes caused by this seismic activity; in different areas of the world. Vibration, shaking and shifting occurs as underground rock crashes; goes-under or -over other rock, or releases pressure. Earthquakes mostly occur near fault lines, or where tectonic plates meet, but may also sprout in other areas. Mountain ranges identify where there may be fault lines, or past or ongoing seismic-activity. Volcanos arise from seismic-activity, which may eventually erupt and may cause earthquakes. Obviously, earthquakes cause destruction of whatever is on the surface, by collapsing rock, earth and trees; through sudden shifting or opening of the ground; flooding; and collapse of any manufactured structures. Of course, a crisis may quickly arise in the aftermath of an earthquake. The *Richter Scale* is often used to measure the severity of an earthquake, where earthquakes are measured in a scale from 1.0 to 10.0. A minor earthquake, 1.0 to 3.0, may be mild in strength; lasting only seconds and causing perhaps, few deaths and mild property damage. Magnitude 4.0 to 8.0, are considered potentially disastrous earthquakes, and may inflict around thousands of deaths, and millions of dollars in damage. Any earthquake over 8.0 is potentially catastrophic, and may cause many thousand deaths, and over millions of dollars in damage. It is difficult to say the minimum scale of an earthquake that will bring a crisis. Factors may render even a small earthquake; destructive and deadly. Some factors include: geographic location; population density; nearby bodies of water; and the area's construction standards.

Again, earthquakes, especially minor ones, occur often and in many areas of the world. Very recently, in 2023, there have been several earthquakes around the world. A 3.8 magnitude earthquake occurred 14 miles from Malibu, California, USA, on July 2, at 6:27 AM; A 5.3 (magnitude) occurred 22 miles from San Juan, San Juan Province, Argentina on June 30, 8:57 AM; and a 5.5 occurred 58 miles from Labasa, Fiji. Many years ago, I experienced the tremors of an earthquake in the Dominican Republic. It was during

school hours in my childhood, in what I believe to be the fall of 1988. [*]. I looked at some records of the time, and found that there was a 5.7 earthquake in the Mona Passage, an area in the Caribbean Sea about 140 miles east of the city of Santo Domingo. I recall, during this short event, my teacher became terribly scared and dropped to her knees in prayer. Me and most of my classmates followed her actions, and were all terribly shaken by the short occurrence. It only lasted about 3 to 10 seconds, and there may have been more than one tremor. At that time, we were in a second level of a school building, and felt the tremor perhaps more than those on the ground level. I recall we felt extremely relieved, and thankful, as it quickly stopped. And, my teacher took much of the rest of the school time to recover and talk to us about what had just occurred, as well as other of her many personal stories.

Nothing came of my experience of that distant earthquake. No damage or deaths were reported. But, many around the world have not been that fortunate. Surely, destruction and death has and will occur, as result from earthquakes, and crises of many kinds have and will ensue. For example, in June of 2022, Afghanistan suffered a magnitude 6.2 earthquake that caused massive damages, over 1000 deaths, and over 2000 injured. The provinces of Paktika, Paktia, Khost, and Nangarhar were areas of that nation; most affected. There, over 10,000 homes were destroyed or severely damaged. [*]. And, many factors came together to exacerbate the already severe event. A multi-pronged crisis followed with shortages and the collapse of many goods and services.

In addition to the deaths and injury to people, the destruction of homes and infrastructure may usher other crises. Shortages of goods and services may affect people; weeks to years after an earthquake. An earthquake's effects may impact roads, rails, and pipelines, all of which may severely disrupt transportation of goods and services. Flooding may occur if the water flow of rivers or lakes are suddenly shifted by the earthquake. This shift may bring many of the ill effects of flooding. Furthermore, earthquakes may affect water and food supplies in a variety of ways. Electricity and communications can also be severely affected by a physically-destructive earthquake, as power lines and other infrastructure may be damaged or destroyed during the event. On and Off grid resources may be impacted if you are directly impacted by a destructive earthquake. But, I believe off grid resources to be more resilient and able to help during such events.

Off grid resources may be more resilient to damage from earthquakes, such as water, food, energy, and communication resources and services.

Utility water is easily damaged by an earthquake, as it heavily depends on underground water plumbing that can be damaged by shifting rock and gravel. For example, ground water may be impacted by an earthquake, as this ground source may become mixed with pollutants and earth; thus contaminated or destroyed. In this case, the off-gridder will surely benefit from stored water, and extraction from clean surface bodies of water. If your rain water collecting system survives the earthquake, rain collecting may be a reliable source of water after the earthquake.

Crops and farms may be damaged or destroyed during an earthquake. Food may become scarce, especially if the affected area depends on locally-produced foods. If an off-gridder can produce all or part of her food, even after an earthquake, this can alleviate local food shortages. This food supply may even help others in the affected area, temporarily.

The off-gridder will surely benefit, even if the utility grid around her collapses. Electric power is very fragile per my experience. A downed tree, post, or tower can bring down the power for an entire area

for days or longer. As a producer of energy; if your home, and energy producing equipment, survive the earthquake, you may be among the few that will have electricity in the impacted area. As off-grid electricity does not depend on large plants or infrastructure easily damaged by earthquakes; the off-gridder may become the damaged area's "only supplier" of electricity.

With utility electricity; down may go down too. If the off-gridder has stored electric charge in batteries, she may use that to power-up communication equipment. Again, in the aftermath of an earthquake, off gridders may be among the few, or only people, able to communicate with the outside world. This is, of course, if your radio antenna and other equipment survive the earthquake. But, you may be ready to provide help in search, and location and rescue operations; in the aftermath of an earthquake; using off grid communications. And, many radios do not require much power to run. A few dozen watts of energy will do the job most of the time, which is easily supplied by 12 volt batteries.

Electro magnetic pulse event (EMP)

An EMP is a natural, or artificial, brief burst of electro-magnetic energy. An EMP may occur as an electro-magnetic field, electric field, as a magnetic field, or as conducted electric current. The electromagnetic interference caused by an EMP can disrupt communications, and if strong enough; damage electronic equipment. [*].

Lightning EMPs, meteoric EMPs, and Coronal (solar) mass ejections (CMEs); are examples of naturally occurring EMPs. As you know, lightning strikes occur often, all over the planet. Of course, they can directly damage electrical equipment and infrastructure; with the voltage overload they produce. But also, there may be "lightning outbreaks" that may, for example, damage multiple critical utility electrical facilities; in a very short period. Along with the electrical and physical damage of lightning, fires caused by lightning may cause damage far beyond the strike point.

The coronal mass ejections (CMEs), or solar storms, may create electro-magnetic fields (EMPs) that may damage artificial earth-orbiting satellites, as well as ground-based electrical utility infrastructure. Among the strongest CMEs recorded was the Carrington Event. It occurred on September 1st and 2nd of 1859, and was reported to cause strong auroral displays globally. And, it caused sparking and fires in multiple telegraph stations. [*]. It is estimated that a Carrington-like CME event, today, would cause severe widespread electrical disruptions. [*]. In 1921, a less severe solar storm occurred, and widespread radio communications disruption was reported. More notably, in march of 1989, a solar geomagnetic storm disabled electrical services to large parts of Quebec, Canada. And, in July of 2012, a Carrington-class solar superstorm narrowly missed earth on its trajectory. [*]. Other, naturally occurring EMPs may have severe localized disabling or destructive effects; on the now vast worldwide electrical grid and its equipment.

The EMP caused by a nuclear blast is among the most feared types of EMP today, as it may be much more destructive and its targeting; deliberate. The effects of a nuclear blast are bad enough, but the EMP caused by the blast will surely bring an extra layer of crisis to the dire situation. Furthermore, there may be non-nuclear weapons that may be exclusively designed to cause EMPs.

Again, the most direct effect of an EMP may be the failure of grid electricity. However, Off-grid electricity may be affected in the same way, as many electronic equipment will be affected similarly. But, the interconnectivity of the utility grid is its largest weakness. As damaging voltage may quickly

spread through the connected grid. Off grid electronics are much less subject to damage from an EMP, due to their isolation and simplicity. And, even if damaged, off grid electrical components can be quickly repaired or replaced. Furthermore, an array of other crises may surely follow an outage of the utility grid. Shortages of all kinds may ensue; fuel, communication services, food and water. As stores, warehouses, service centers, and other facilities may be “out of power”.

Again, the damage caused by an EMP, to the off-gridder, may be localized and quickly repaired. Or, the off-gridder may keep components under EMP protective covers, or keep protected spare parts that may be used to quickly replace defective ones. EMPs are likely to affect mostly sensitive and small electronic components, such as circuit board components. So, simpler, robust components may not be affected, such as those found in a basic solar PV system.

Radio equipment may escape the effects of an EMP, if stored in EMP resistant wrapping or containers. Some EMP protection methods and technologies will be discussed in book 2. Lastly, in the aftermath of an EMP, you may be among the few points of communication available, thus a likely source of relief for the area.

Volcanic event

A volcano is a channel into the hot molten material under the earth’s crust. This molten area of the planet is called the mantle. A volcanic event is when lava, steam, and tephra (small rocks) overflow, erupt, or explode through the volcano’s opening (the caldera). Volcanoes may exist in high peaks, plain terrain, or under the sea. Huge pockets of magma (molten rock) rise toward the earth’s crust and accumulate. At times these pockets find or create one or more fissures (cracks), on the crust, that release pressure by ejecting lava, steam and tephra. Volcanoes are then created by the slow accumulation of erupted lava. [*].

Volcanic events may cause various degrees of destruction to natural and human-made environments; by causing fires, ash rain, lava flows, and by blocking sunlight. These can disrupt or destroy plant, animal, and human life, in a variety of ways, including direct or indirect destruction or damage. For example, you may escape the fires and lava of a volcanic event, but your food and or water supply may be destroyed by the ensuing fires, lava flow, or ash cover. Utility electricity and communications may be disabled or destroyed in the same manner. Your home may be destroyed or permanently damaged, even if it escapes the initial fires or lava runs; perhaps through ash cover. The fallen ash may collect meters high, and bury some or all of your home. The ash may then become a heavy slush, with rain and other contact with water, and further damage human-made structures.

Recently, the Cumbre Vieja volcanic ridge, in the Canary Island of La Palma, erupted in the fall of 2021. The lava flow covered 1000 hectares of land, and prompted the evacuation of about 7000 people. Furthermore, it destroyed more than 3000 buildings. [*]. That very December, 2021, an eruption began on the Hunga Tonga-Hunga Ha’apai submarine volcano, in the Tongan archipelago in the southern Pacific Ocean. The eruption then spectacularly exploded, on January 15, 2022, causing the largest atmospheric blast ever recorded in history. The eruption caused tsunamis in several continental coasts. Fortunately, due to the remoteness of the volcano, only about 4 people lost their lives. However, innumerable sea life perished or were affected, and the environmental damage it caused to reefs and marine life may last years. Often, eruptions can affect nearby populations of human and animal life; for years after the event. [*].

Given the survival after a catastrophic event, the off-gridder may benefit from a sustainable lifestyle, even in the aftermath of a volcanic event. I believe, due in part, to the greater ability to quickly relocate, and the off grid sources for water, food, electricity and communications. Also, due to the off gridder's expanded knowledge and skills in survival and efficient methods.

Apart from direct impact from lava flow, fires, or heavy ash fall; locally stored water should remain consumable. Rain collectors are likely to be affected by any kind of ash fall, so container stored water sources may be the most reliable during and after a volcanic event. A ground water source may also be intact, because water reservoirs may be tens of meters or more, under ground. Surface bodies of water may be affected, but if undisturbed; the off-gridder may have access to those for usable water. Again, stored water may be the most reliable, perhaps the only source of water immediately during and after a volcanic event.

Locally-grown food land may be affected by ash, or ash cloud cover or both. And outdoor farm animals may be directly affected by ash cover, unless kept in covered structures. The same goes for outdoor fruit plants. But, stored food stocks may help the off-gridder "weather the effects" of a volcanic event, until it passes or relief arrives. The off-gridder may have the ability to store large amounts of food and keep it fresh, even without electricity.

Solar and wind, and other alternative energy generators likely be affected by a volcanic event. Ash may cover solar modules, and lava flow and fire may destroy all in its path. The sunlight may be blocked, for days or longer, after the event. If your site remained unaffected by fire, then you may be able to remove ash from solar modules, and use the system to generate some charge. But, stored energy, in batteries, may be among the few options as a source of electricity; in the aftermath of a volcanic event. Alternatively, you may be able to run a fueled generator for short periods, to use tools and appliances, and even charge batteries. Remember, generators may run on liquid propane, diesel, kerosene, and other fuels.

You may be able to communicate using off-grid communication equipment, in the aftermath of a volcanic event. But only if your antennas have survived direct impact, fire, or lava flows. Like during other crises; you may be among the few able to communicate after a volcanic event, and others will likely need your help with communicating in the aftermath. Batteries may be used to power radio communication equipment.

Tunguska-like asteroid impact

Although rare, asteroid impacts may cause widespread crises, and some have happened throughout human history. In 1908, a 12-megaton blast was caused by what scientists believe was an exploding asteroid. The blast occurred over the sparsely populated East Siberia taiga. For comparison, the Hiroshima bomb blast was a 15-kiloton blast. The explosion flattened and burned an estimated 80 million trees; over a 2150 km2 area of forest. The object is estimated to have been a stony asteroid; about 55 meters in size. [*].

On February 15, 2013, a 450-kiloton explosion was caused by an asteroid air burst over Chelyabinsk Oblast, Russia. Over 1400 people were injured, and some 7200 buildings, in six cities, were damaged. The asteroid was 13,500 tonnes in weight, and about 20 meters in size. [*]. Like the Tunguska event, this asteroid blast had the potential to cause a major disaster if it detonated over a populated area. A "direct

hit", over a populated area has not been recorded in history, but it is obviously a possibility worth being prepared-for.

Tunguska-like asteroid blasts can cause destruction of all types of structures; natural or artificial. They are nature's hydrogen-atomic bombs. In fact, Tunguska type explosions are magnitudes of the largest atomic bombs. [*]. So, the damage could be apocalyptic. For example, the pressure wave and heat alone; may cause the first layer of destruction in a large area. Then, a cascade of other problems may follow; like spreading fires, secondary structure collapses, rolling utility outages, and continuing death and injuries due to the hellish conditions around the blast zone. Additionally, the blast may produce an EMP that would surely damage the electrical grid and electronic equipment kilometers from the hypocenter. Shortages of water and food, in the wider blast area, would be caused by spreading disruptions. For example, water services far from the hypocenter may be impacted, due to damage to treatment plants and plumbing near the blast area. And, there may be damaged roads, and many vehicles blocking roads for days or longer, and traffic signals may be out of service for longer periods. Lastly, there may be an array of additional problems indirectly caused by the asteroid impact. So, surely, such an event would change life for anyone.

Given survival and relative safety, those off the grid may be able to more easily cope with the effects of an asteroid impact. Your survival skills, technical knowledge, and efficient methods may serve you in many ways, as may your off-grid structures, stores and equipment.

Stored water can be used to weather the likely shortages in the area. Tunguska asteroids generally break up just prior to impact with the land. So, rain collection systems may be damaged by such an event. If the impact is away from water, ground water, or bodies of water, are likely to remain trusty sources of relief for all that can access them.

Stored food, or local food supplies, may provide secure sources of calories after an asteroid impact. If you can produce your own food locally, even in small amounts, it would be a great relief for you and others. Be aware that asteroid explosions, even if in the atmosphere, may clear out entire fields of plants through the shockwave, heat and burning. So, outside of a direct impact, you may be able to still grow food on the land around and away from the impact zone.

With the utility grid down by the blast, fires, and or the EMP; the off gridder may be able to repair her "micro-grid" quickly. Especially with EMP protected parts and equipment in store. For example, if you keep your system's main components in an EMP-proof enclosure or room,; you may be able to generate energy after the blast. Again, you may be a point of relief for others, so be ready for that as well.

Like energy, the communication grid will likely be damaged by the effects of a direct asteroid blast. Given your antennas survive, or could be repaired quickly, and given your communication equipment was stored in EMP proof cover; you may be able to communicate with the "outside world".

Section 08

Preparedness - part 2

Catastrophe preparedness

Introduction

A catastrophe is a major change to any system or person, which brings long term or permanent disruption. This drastic change can be caused by sudden destruction or rapid shifts in the “usual order of business”. Catastrophes may also bring widespread death and long term, or permanent, change to areas of various sizes. Although catastrophes may harm some species and aid others, or may even bring improvements in some ways “down the line”; in this context, catastrophes harm the human quality of life. Catastrophes can also be defined as near-total, or total collapse of a system, environment, or cycle. And, these can be multiple. And, there may be one or more catastrophes in one or more areas, and they may start and end at different periods of time. Furthermore, when catastrophes “start” and “end” may be difficult to determine.

There are human-caused and natural catastrophes. There can also be natural crises exacerbated by human activity, which may turn to catastrophes. Examples of human catastrophes are social collapses, financial collapses, political collapses; all of which can devolve into conflict and war. Natural catastrophes may include pandemics, mega volcanic events, mega storms, tornado outbreaks, mega EMPs, extinction-level asteroids, mega earthquakes, and mega tsunamis. I add the qualifier mega to these, because earlier I classified many of these events -in a smaller scale-; as crises. Apart from destruction, catastrophes may too completely stop systems for a long period or indefinitely; like access to clean water; food production; government; education; healthcare; electricity; etc. For example, a war may stop multiple vital systems in a particular area; “cutting” people away from many vital sources: water, food, healthcare, transportation, etc.

Living off the grid may help you to survive, cope-with, and overcome catastrophes. Of course, considering many uncontrollable factors; nothing is a guarantee for anyone during or after a catastrophe. Again, no one can completely “break-off” from every system for long, as supplies will run out and isolation will harm the isolated. But, a healthy amount of self-sufficiency, and renewable systems, can go a long way enabling people to deal with the effects of a catastrophe. First, by ensuring the continued availability of water, food, electricity, and communications. Then, the off gridder may make ample use of her or his efficient and advanced methods and technologies; to emerge from the effects of the catastrophe. As the effects of catastrophes vary depending on the type, here, will discuss: (1) various types of catastrophes; (2) some historical examples; (3) what ill effects they can produce; and (4) how you may benefit from living off the grid during such event.

Human-caused catastrophes

War

Wars are human conflicts which turn large and severe-enough to organize into violent and opposing factions. War may include various types ranging from local conflicts such as sectarian, gang or race conflicts, to international mechanized warfare; involving many nations. Wars are often industrialized

and may be national (civil), or international (nation against nation) or world-wide (groups of nations against other groups of nations). I believe war is the epitome of human failure; when humans turn to large-scale lethal violence against each other: to settle disputes, gain territory or resources, or to disable or kill-off those deemed threats.

War may take many forms now, and war has changed over the centuries. War may be previously announced, announced as attacks are mobilized, and done by surprise. There may be initial attacks or preemptive strikes. A full invasion may take place, where an area is attacked by several methods and waves of attacks may last from days to years. If attacks accomplish their destructive goals, then occupation may ensue. Occupation generally involves the forced disarmament and subjugation of the losing party. The occupying force may control and remain in the area from weeks to indefinite periods.

Unfortunately, human history is littered with wars. And, we have had a history of increasingly lethal and increasingly larger conflicts. To my knowledge, every epoch and every territory has experienced wars throughout its history. And, in most cases humans have chosen to see opponents almost as different species or “races”. With few exceptions, wars have had a racial aspect. For example, as I wrote in this book, there is a war between Russia and Ukraine. One brought about by a complex set of geo-political circumstances and pushed by human egos, fear, arrogance, and racism. The same can be said about the war in Gaza. Militarism, fundamentalist religion, and racism play big roles there in my opinion.

Ultimately, I believe that war was started, and is still being fought, due to the low priority we still have on the worth of human life. And the still low priority of our shared biology and interest on this planet. And, because we still have not embraced the fact that “we are the only semi-intelligent species in the universe, as far as we know”. Per reports, due to war, many areas of Gaza and Ukraine have completely collapsed and have become uninhabitable. Others are in the process of collapsing or have partially collapsed. I believe that warring nations will suffer, and face collapse in various ways; largely due to their aggression. The situation in those places even carry the risk, more than any other in history, to devolve into nuclear war and genocide. In the perspective of an outside observer, the situation is frankly an embarrassment for our species.

The savagery is present and recent when speaking of the US. The nation is involved in war-like attacks in several nations, and just recently waged a brutally long war in Afghanistan and Iraq (2001-2020). Again, the nation of Israel has waged a brutal and long war on the Palestinian population for decades; still slowly devouring their lives, human rights and territories as I write this. Yemen has been under severe attacks internally, from Saudi Arabia and the US; since 2014, triggering nationwide catastrophes in that country. [*]. Syria has been ravaged by internal and external war since 2011, with a precarious ceasefire in effect since 2020. [*]. Just in the mentioned wars and conflicts; there have been several millions of directly related deaths, and many millions of indirect deaths. War can bring unbelievable destruction and human suffering to entire nations, or widespread areas, through catastrophic collapses of water distribution, food production, healthcare, the economy, government, etc.

It is needless to say how war can bring innumerable problems to individuals, communities, and entire societies. And, apart from death and the severe injury war can inflict on large numbers of people; it can also cause scarcity and unavailability of water, food, shelter, medical care, electricity, and many other critical services; in hellish scales. Again, this may occur to widespread areas, where it may be extremely difficult to escape for many. And, war often triggers mass migrations, and displacement; placing many in peril on their journey. Refugees may be exposed to the dangers of fighting and the harsh environment,

and to abuses from more fortunate groups. The young and old, especially, may suffer and die in greater numbers; during war.

During and after a war, those living-off the grid may greatly benefit you and others due to their skills, stored water, food, and communications. Of course, war may affect even those off the grid, with its violence and destruction. Local energy infrastructure, water and food supplies, and means to produce may all be affected by war. In such cases, the off gridder may still benefit from her or his ingenious methods, efficiency, and experience. Especially the ability to avoid being caught in the crossfire; will come handy. Given you remain physically unharmed, you may be able to survive, and help others do the same, with your off grid knowledge. The off gridder may especially benefit during the worst types of war; nuclear and biological. During these types of warfare, the environment outside may be rendered uninhabitable due to radiation and other types of contamination. And, the off gridder may benefit from their ability to harness ground water, and produce food and energy locally and indoors. These possibilities will be detailed in book 2. But, as a preview, hydroponic and greenhouse gardens may produce food indoors. And, many animals may be farmed indoors. The ability to remain indoors for extended periods, and remain healthy and relatively happy, are some of the things that may contrast the off-gridder from those solely dependent on the “outside world”.

With war, there are countless scenarios and possibilities. Humans, seemingly, have found no boundaries on their ability and willingness to bring suffering and destruction to each other. And, this is unlikely to stop in the foreseeable future. Perhaps in the distant future we will unite as a world and realize that we are one species that benefits from the contributions of everyone else, and that violence is counter to that idea. Perhaps one day, somehow, war will not be tolerated nor allowed.

Political collapse, social collapse, uprisings and rebellions

Humans often disagree. Disagreements may be severe enough to separate large numbers of people into different factions. Factions can differ in ideology, race, religion, politics, or more; or a combination of these. These factions may organize protests, demonstrations, and riots, as ways to bring discomfort and inconvenience to the opposing party; in hopes of bringing them to the “negotiating table”, make them leave their area, or in some cases annihilate them. Political disagreements may be quite severe, and uprisings, rebellions, or insurrections may occur. These may bring changes that can bring rapid and widespread change to the political and social fabric in an area or nation. These “revolutionary changes” may bring traumatic outages to many of the goods and services provided by society and government. As mentioned earlier, political and social collapse is the ending or changing of a stable government and or social system. These may be replaced by another type of system, or remain absent for a period of time, sometimes called a “failed state”. Regions or nations without political and social order often turn violent and destructive, as “the law of the jungle” generally replaces agreed upon civil laws. Many may die, and cities and towns may be severely disrupted. Property and infrastructure may be damaged through fires, vandalism, and explosions. These may disable utility and other services for various lengths of time, including water, food, and energy distribution. Healthcare and education may be also affected during political and social upheaval.

History is littered with short term and long term political collapses, social collapses, uprisings and rebellions. The 20th century saw Europe convulse violently with shifts and changes of its political environment. Many nations ousted their ‘royal overlords’ and welcomed democracy, in various ways, including using violence. The two world wars caused great shifts in political boundaries, and social

orders. New nations were carved and some disappeared or were reorganized. These brought massive displacement and suffering changes to millions of people in the continent. Further to the east, Russia had its own revolution that violently and swiftly changed an entire nation in every way possible. Russia transformed from a secluded monarchy to a military-industrial power within 50 years. But, the changes necessary for this cost millions of lives, and the suffering of many more, through war and famine. Later, internal and external forces caused Russia to change its political system again in the late 20th century, bringing, yet again, massive political and social upheaval. Cuba went through similar social and political convulsions in the mid and late 20th century, and so did China and Korea. There the governments changed very suddenly and deep changes brought massive scarcity and displacement. In the 1980s, Central America had conflicts and war which caused massive political and social shifts. These caused the displacement of millions of people within the nation and into the US. Poverty, deep scarcity, strife, and violence may follow political and social collapse.

Living off the grid, to any degree, may benefit those involved in war. During and after political and social collapse it is essential to remain 'off the streets' as much as possible. Violent and desperate individuals may be roaming the streets and other areas, looking for victims and resources. Mobs may also be many looking to control areas and resources through intimidation, violence, and coercion. Be aware that, during such periods of lawlessness, there may be those willing to kill to control territory and resources. So, the off-gridder hopefully will be prepared to the point where she or he could avoid these predicaments. Moreover, the ability to produce may mean longer time off the streets and away from danger. Clearly, in such dangerous times, it would be best to "lock yourself in", for safety and protection. And, if resupply is needed, then venturing out would be a worthy cause; survival.

Again, the off gridder may benefit not only from the ability to produce, but also from the ability to quickly adapt to the lower available resources; water, food, energy, etc. Even during times of normality, the off gridder should live efficiently, so that in times such as social collapse, she or he will be prepared and be able to decrease consumption even more. Lastly, the off gridder may be able to mask her or his off grid activities, or even their existence, during a period of lawlessness by remaining indoors. And water, food and energy may be produced with a relatively-small "foot print", some of which may be indoors. The resourcefulness and creativity of the off gridder may aid in surviving and thriving during a period of collapse. With luck, if the conflict lasts long, the off gridder may make peaceful alliances with other peaceful individuals in the area through off grid communications, and perhaps create a network of advocacy to begin to advocate for peace, order, and civility.

Financial collapse

The world has grown increasingly dependent on national and international finances. Especially after the worldwide adoption of capitalism and the monetary system. And history has taught us that capitalistic society encourages suffering and scarcity through greed, and continuously works for the advantage of mostly the wealthy.

A financial collapse can occur when there is a financial depression or when a currency collapses. This can be local or widespread. And, these events could be brought about by many factors such as economic mismanagement, war, corruption, etc. For example, when a deep financial disorder is expected, bankers often respond by limiting loans and restructuring their institutions; but often after funneling significant wealth upward. Actions such as these; generally disrupt all kinds of markets and a financial recession

may ensue. In some cases the disruption triggers a domino-effect that may cause a widespread economic depression. In rarer cases, a complete financial collapse may occur.

Financial services, which fuel many other industries, may severely slow or cease to operate; in dire financial depressions. During this time, and long after; commercial, social, and government services may also be severely impacted or stopped. Scarcity of jobs, income, and money generally triggers scarcity in goods and services in many other markets. There may be scarcity in water, food, electricity, and communication services. Although wealthy governments may continue to provide services in a limited capacity, during such times, some governments may be directly impacted and weakened as a result. In some financial collapses, the government may cease services or become ineffective at its duties.

Make no mistake; dire circumstances such as the ones described, have occurred in the not-so-distant history. In 1929, the US financial stock exchange crashed due to various reasons. Among them was the widespread public panic in the banking sector. There, millions of people flocked to banks to withdraw their funds, causing a widespread depletion of the money supply. [*]. In turn, loans became severely scarce; thus "drying-up" liquidity in a plethora businesses. Also, the consequences of the then-recent world war; cannot be ignored. Many countries in Europe were destroyed and the world's power dynamics changed dramatically. The great depression quickly spread to the rest of the world, and national and international commerce was deeply disrupted. In its aftermath, millions of people suffered permanent or extended unemployment, displacement, and hunger. In the US alone, unemployment peaked at nearly 25% of the entire population. [*].

In 1991, the Soviet Union collapsed as a coherent government system, and its economy suffered deeply as a result, peaking in 1998. And, the many nations that were dependent on the Soviet economy; suffered after its government system's dissolution. Cuba stands as an example of this, going through a severe period of financial and material scarcity; due to this and other factors. [*]. In 2008, the US came "uncomfortably-close" to triggering another great depression. Instead the financial crisis was limited to a severe recession. However, millions suffered from the subsequent high unemployment, goods and services cost inflation. For the US; it was a slow and grinding recovery. And, in June of 2022, the economy of Sri Lanka was declared as "collapsed". That nation suffered severe shortages in food, electricity, and fuel. The country also struggled to provide essential services such as education and healthcare. [*].

In our money dependent society, the negative effects of a financial collapse are obvious. For example, the cruelty and the greed of utility companies, will prompt their swift disconnection; at the slightest hint of non-payment. And non-payment is very likely in a financial collapse. Likely, your income will stop, your savings may quickly dwindle and inflation may devalue your money reserves. If payments can't be made, not only by you, but by most of your neighbors; the utilities will severely slow their quantity and quality of service, or cease to operate entirely. This "cascade effect" may slow or stop water, food, electricity, and communication services. Other goods and services may become scarce or non-existent for long periods of time.

The off-gridder will not benefit from a financial collapse. But, she may be more able to maintain a safe, healthy, and happier existence than her grid connected peers; even during and after a financial collapse. Again, this may be possible through the off-gridder's diminished dependence on the monetary system and other systems. As mentioned earlier, if you can harness more of the earth's naturally and freely available resources; you don't need to pay as much or any money for them. Remember, no one ever

created water and food. So, those who charge you for them, are just mostly interjecting themselves between you and those resources, only packaging them and putting a label and a price tag on them. Yes, I understand it takes labor to farm, gather, and distribute food. But those are things easily done by most of us. At least to a good degree. But, we have allowed abusive food costs to be normal. I say, we should "disallow it"! Harnessing water and growing food can be free of monetary needs. I will explain exactly how in Book 2 of this text. The same may be the case for harnessing and producing energy, and maintaining long range communications, with few exceptions. Again, if an off gridder is really not totally disconnected. She may be "online" with infrastructure, methods, and systems; to harness and generate these resources efficiently and share them. All while hardly feeling the effects of a financial collapse. In fact, she or he may benefit from a financial collapse in that they may provide and relay those systems and knowledge to others, and become a source of knowledge and freedom for others.

Nature-caused catastrophes

Pandemics

As I write this, the world is still reeling from the effects of Covid-19, the 2020 pandemic. As I speak, thousands are still dying every week worldwide, and the death toll at this moment is around 6.9 million. [*]. Our response, as a world, could be categorized as nothing more than "pathetic". Some of the most "advanced" nations and their leadership turned out to be among the most "stubborn" when it came to taking protective measures. We witnessed as nations chose to protect their "coffers"; over the lives of hundreds of thousands of their vulnerable citizens. In the US, for example, we saw how arrogance and selfishness quelled collaboration, and caused nations to deny sharing aid and medicine in or out of their borders. As each week claimed more and more lives, during the pandemic, we saw vaccine resistance mobilize with exceptional strength; not only to remain unvaccinated but to discredit the efforts to protect and vaccinate others. In wealthy nations, we also saw how governments redistributed wealth using the pandemic as a pretext. Mainly syphoning it from poor to rich; by giving businesses and corporations unjustifiable grants disguised as "loans to protect jobs". Curiously, these "loans" had little requirement to protect those jobs. As millions lost tens of thousands in income and property, governments handed-out meager checks totaling a few thousand dollars; spread over a period of about a year. These depressive checks were given to the general population without prerequisites, and included the wealthy who surely took longer to deposit their unneeded checks.

Also, during this pandemic, we saw how governments used the event to deny entry to desperate poor and dark-skinned asylum seekers, and migrants by the tens of thousands. And, to further deny aid and relief to oppressed populations, in Palestine, Afghanistan, Latin America, Africa, and the Middle East; things were as violent and cruel as ever. Not only did governments deny aid to largely-oppressed populations, but even in America where the healthcare racism was more exposed [*]; official violence was unleashed when people united in protest in the black lives matter demonstrations. [*]. Three years into the pandemic, after it apparently was "wrapping up", but likely having run most of its evolutionary course unaverred; it continued killing thousands of unvaccinated hosts every week. And in the midst of this, a powerful few decide that going to war was the priority of the moment. The conflict in Ukraine erupted in early 2022, and our attention away from the pandemic was then complete, vaccinated and not. By now, the pandemic had evolved into a disease that was just-barely more severe that its

predecessor, the flu which originated in the 1918 influenza pandemic. And, embarrassingly, the 2020s Covid-19, caused orders of magnitude more deaths than the 1918 pandemic. [*].

Unless you're somehow utterly uninformed about the 2019 pandemic, we should now be quite familiar with the causes and possible worldwide effects of a viral pandemic. We know, as it did, that it can bring disruptions in human migration; water and food availability; social life; and commerce. It may affect necessary supplies of medicine and many other health related needs. For example, in the spring of 2022, there was a severe shortage of the breast milk alternative; baby formula. [*]. In a society where limits are mostly determined by how early you arrive at the store, and how much money you have in your purse at the time of purchase; supplies quickly vanished. And, many babies and their families struggled to secure the few left and dwindling supplies. All due to the early buyers hoarding vast amounts. Also, rushes on toilet paper and water affected those supplies too, in many areas during the pandemic. Business and government facility closures affected the job market and the availability of countless goods and services, for limited periods in the US, and longer periods in other parts of the world.

The reaction to the pandemic was quite varied around the world. For example, some cities in China were strictly locked-down for several consecutive weeks, while vast areas in the US dismissed the pandemic as a "hoax"; early-on. There, local governments and businesses failed to take any significant precautions and many deaths resulted. Apart from the death and health crisis suffered by many individuals during a pandemic, it threatens the economic and material standing of millions. In such events, your income may slow down or stop for indefinite periods. And your savings, if you have any, may quickly dwindle. During that time, many struggled to pay for basic things such as food, rent and healthcare. Food-aid lines were at record breaking lengths all over the world, and many employers either laid-off workers or took little to no precautions to protect their workers from the disease; so many quit. This careless and arrogant corporate attitude toward their employees triggered one of the largest employment resignations and refusal to return-to-work; in American history. [*].

Clearly, a world-wide pandemic is a catastrophe, and they are unpredictable as to the course it may take in its severity and the response of the people in charge. For this, living off the grid may bring many advantages. In the early stages of a pandemic, where panic and chaos may break out and threaten safety and many other necessities; an off gridder may be able to quickly isolate from others. This is the most effective defense in a pandemic. This isolation, however its extent, aids in the prevention of infection and may enable you, and others, to remain in relative safety and peace during possible panics. So, in a pandemic the tables turn for off-gridders, as isolation is necessary.

Additionally, the off grid lifestyle helps you avoid all sorts of other unnecessary problems during a pandemic; like how to get basic needs. As in other catastrophes, the ability to harness and store water, grow and store food, and generate energy locally; give the off gridder clear advantages. Also, the ability to communicate through long distances, relatively privately and reliably, may give the off gridder an edge in coping with the effects of a pandemic. Importantly, the ability of the off gridder to live without the strict dependence on income is a huge advantage. Given the off gridder has secured low cost or free shelter; she or he may live in isolation without the need to earn money for indefinite periods. Even If the off gridder pays for her shelter, she may be able to "hold out" much longer than others who use money much more. And, some monetary savings, even if little, may go a long way for the off gridder. Recall: less bills, less need to work for money to pay for those bills, right?

More valuable than the technology and the property, is the off-gridder's ability to make consistent smart and logical decisions. As we saw, logical thinking "was thrown out the window"; in many areas during the pandemic. Logical decisions may be uncomfortable and inconvenience some for the benefit of many more. But, many rather risk it all for the sake of keeping things the same. For example, wearing masks in public; supporting, considering, and taking relatively safe and effective vaccines; avoiding gatherings and crowds; avoiding panic purchasing; etc. As reasonable as these things are, they were the focus of rabid resistance for millions around the world, especially in the US. Hopefully, the off gridder values empirical, statistical, and scientific evidence; enough to remain objective during a pandemic. Thankfully, world pandemics are rare, but when the next one will occur, naturally, accidentally or deliberately; is utterly unpredictable. But, I wholeheartedly believe that living off the grid is a powerful lifestyle for preparedness; to cope, survive, and emerge from; and to help others during the next possible pandemic.

Mega-volcanic event

The largest mass-extinction event is thought to have been triggered by massive volcanism about 255 million years ago. [*]. And, mega-volcanism is theorized to have contributed to the extinction of the dinosaurs, about 65 million years ago. A mega volcanic event is *not* the single volcanic eruption, occurring once every few years or decades, it is entire-planet-affecting; caused by a cascade of massive volcanic eruptions spanning hundreds of years. If humans lived through such an event, there would be several generations that experienced only these volcanic conditions. A super volcano eruption may also qualify as a "mega" volcanic event. A super volcano will have an eruption with a "volcanic explosivity index" of 8 or larger, and the volume of deposits, ejecta bulk volume, would be greater than 1000 cubic kilometers (km3). [*]. This means unthinkable destruction to large portions of a region, with likely planetary-wide impact. I'm talking about entire nations, or even continents, that may be effectively sterilized from entire species, in other words, entire ecosystem collapse.

There have been super volcano eruptions in the relative-recent history, and it is likely one will occur sometime in present times. Such as the Taupo Super volcano, modern North New Zealand (26,000 years ago); Toba Caldera, modern North Sumatra (75,000 years ago). Like these, some were particularly large mega volcanoes. With the Toba Caldera eruption and Tetagouche Group, in what would become modern Canada, 466 million years ago. This event tops the list; with an ejecta bulk volume of around 5000 km3. [*]. A looming possibility of comparable magnitude exists throughout the world, including areas in or near Yellowstone national park, in the US. [*].

Mega-storm event

Storms may be classified as: storm of the century, 500-year-storm, or 1000-year-storm. These are storm cells that can bring unimaginable deluges and floods that may affect entire continents. Such storms have occurred many times in history, and may be the reason why there are several accounts of "world spanning" floods in ancient texts. [*]. In modern times, some storms have brought catastrophes. For example, in 2005, Hurricane Katrina, brought catastrophic floods to the Mississippi river basin, causing historic flooding; in South Louisiana especially. Officially, about 90,000 square miles were declared part of the "disaster zone", by the US government. [*]. And, Hurricane Sandy, in 2012, brought similar flooding to the North East states of the US. And in 2020, unbelievable flooding occurred in six nations in South Asia: Afghanistan, Bangladesh, India, Nepal, Pakistan, and Sri Lanka. There, upwards of 6000 people lost their lives directly due to the flooding, and unmeasurable material losses occurred. [*].

Additionally, in the summer of 2022, Pakistan experienced its most extensive flooding. There, floods were among the deadliest, with over 1700 deaths, and one of the costliest disasters in its history. [*]. Disturbingly, in the midst of the effects of global warming; flooding is expected to be among the most destructive aspects of mega storms.

Living off the grid surely helps. Of course, if the off gridder escapes the flooding itself. Again, even if all but life and health is lost; the off-gridder's knowledge and methods may still aid in the survival, coping, and emergence; in the aftermath of a catastrophic flood. First, the off gridder will know to locate shelter in high ground, ideally well-before any catastrophe strikes. When this is not readily possible, the off gridder should monitor the weather and evacuate early during warnings, or at first signs of the event. If evacuation has become unsafe prior to a possible flooding event, then emergency evacuations to high ground may be necessary. This means having a way to navigate in rough and deep water. If the off-gridder already resides in high ground during such an event, she or he should accept-in as many refugees as possible. Not doing so on a temporary basis would be criminal! Again, the off-gridder's material and technological aids are likely to help not only the off-gridder, but many others around her.

Super-tornado outbreak

In the spring of 2011, there occurred what is now known as the 2011 super tornado outbreak. It is, as of this writing, the largest, costliest and among the deadliest tornado outbreaks ever recorded. It occurred in the Southern, Midwestern, and Northeastern US; from April 25 to 28, 2011. It left catastrophic destruction, after spawning about 175 tornadoes that struck the US states of Alabama, Mississippi, and Tennessee. Other states experienced less destructive tornadoes in the same outbreak: Arkansas, Georgia, Kentucky, Louisiana, New York, and Virginia. In the winter of 2021, areas of Western Kentucky experienced a catastrophic tornado outbreak. There, multiple tornadoes traveled an exceptionally long trek, over 160 miles! The destruction was catastrophic to several towns and counties along its path; where 57 fatalities were confirmed, and over 4000 structures were destroyed.

If the off gridder escapes the destructive power of a tornado outbreak, she or he may cope with the destruction around her. Access to water, food, communication, and energy may be uninterrupted if these off grid systems remain intact. If not, rebuilding efforts may begin immediately, given the off gridder is unharmed, and fallen structures can be cleared out. The ability to communicate, despite destruction of telephone and cellular network infrastructure, may be among the most advantageous abilities of the off-gridder after a tornado outbreak. She may be able to warn of impending tornadoes before or as the outbreak is occurring, and may take part in rescue and response efforts in the aftermath.

Mega-electro-magnetic pulse

The unthinkable attack, deliberate nuclear explosions, occurred on August 6 in Hiroshima, and on August 9; in Nagasaki, Japan. In addition to the catastrophic and immediate destruction and carnage, due to the explosion, there were the effects of its electro magnetic pulse, EMP. The region at the time surely depended relatively-little on electronics, outside of the analog telegraph and telephone communications. But, surely the electronic systems disabling effects of the EMPs were felt, even there. Further-on, the world only narrowly escaped an all-out nuclear war, between the US and the USSR, in November 1979. The US-based North American Aerospace Command received an automated computerized warning of an "ongoing nuclear intercontinental ballistic missile attack"; thought to be

perpetrated by the USSR. The dire warning was luckily discovered to be “false computer inputs” from an “exercise software program”; which in various ways was initially confused as a “real world” occurrence; by military personnel. At that time, the mistake could have easily been responded-to with catastrophic results.

A nuclear explosion, especially in the upper atmosphere, can have electronic-destroying effects. Electric power, electronic equipment, and communication infrastructure may be disabled during a nuclear attack EMP. As I write this, we are at the highest risk of nuclear war since the cold war years. A nuclear armed-state, Russia, is at war with its neighbor Ukraine, and the conflict could take a number of courses, including runaway international escalation. A nuclear attack, even in US territory or airspace, is not impossible. And, nuclear attacks in other parts of the world are more likely. In the horrific event of a nuclear attack, apocalyptic-level destruction is possible; for large areas of the planet.

In such an unthinkable event, the off gridder is likely to benefit from her abilities, mentality, technology, and methods. Also, the off gridder may quickly be able to adapt to an electricity-less environment, and may continue to harness water from a ground source and grow food indoors. Additionally, the off gridder may have protected her essential electronics, shielding them from the effects of EMP, using one or various methods. If those fail, many ancient and electricity-less technologies exist, which may be deployed or brought up to operation. For example, you may use cooling and refrigeration technologies that date back to the ancient times of Persia. [*]. OR, communication may be quickly reestablished, by constructing analog telephones and infrastructure, using readily available materials and equipment. A host of other life-improving electricity-less, or battery-operated technologies may be built, if not already available; after the EMP. Like, ice box air conditioners, solar cookers, solar refrigerators, and even rudimentary cameras. Many electricity-less technologies will be discussed in Book 2 of this text.

Chicxulub-like asteroid impact

Few things may affect humanity more than mass-extinction events. One of them is a Chicxulub-type asteroid impact. The Chicxulub crater is a now confirmed asteroid impact site near the modern town of Chicxulub, in Mexico’s Yucatan peninsula. It is theorized as being the primary cause of the extinction of the dinosaurs, around 65 million years ago. No human may conceivably survive the immediate direct impact of a Chicxulub-type event. Not unless perhaps distanced 500-1500 miles from the impact hypocenter. And, the consequent earth-changing effects of such an event may further bring destruction of unfathomable numbers of lifeforms. So, those who escape the direct impact may still suffer or perish due to its effects. Those people fortunate enough to inhabit close to a thousand miles away from the impact site, may find ways to survive the ensuing changes to the planet. But likely only if they are conditioned to quickly adapt to such dramatic changes. The planetary atmospheric and biospheric changes, would ensure that only the toughest and most adaptable lifeforms survive. And, I believe many members of humanity have what it takes to survive such an event. But, many, perhaps majority, may not. They simply may not be healthy, skillful, or resilient-enough; to make the necessary adjustments to survive. These adjustments may mean mass continental-distance migrations; reverting to hunting, foraging and gathering food; and quickly securing sources of drinking water. Resources may be especially scarce due to ensuing earthquakes, volcanism, cloud cover, ash fall, etcetera. The entire earth’s climate may “run-away” into unpredictable and extreme conditions. For example early stage ice-age conditions may quickly move in; exposing humanity into desperate “other-worldly” environments. Our technologies and genetic-makeup may rapidly evolve naturally to adapt. But only after mass death

and struggle. We may cope artificially, through technology and medicine. But, for us to cope with technology; it must have already been in place, as after the changes brought by an Chicxulub impact, our technology may be mostly destroyed or unusable. A whole “new world” would be brought by such an event. One that may remain the same for generations into the future.

Living off the grid, in such unlikely times, may take an entirely different meaning. There may be few artificial ‘grids’ to speak of, throughout the world, or to live “off” from. So, “going back to nature” may be something done by necessity, for a large percentage of the surviving humanity. In many ways, the human condition may cycle back, and start again. And, we may slowly attempt to get away from the ravages of nature, and into community and collaboration. Hopefully, with lessons learned from our detrimental mistakes of the past. Having said all this, again, off-gridders, may emerge as leaders under such dire conditions. Contributors of knowledge in the art of survival with the earth’s resources, and away from high technology and a monetary system to depend on.

Mega-earthquake event

Earthquakes for magnitudes of about 9.0 or higher can be classified as “mega earthquakes”. Mega earthquakes have scientifically been called megathrust earthquakes. These earthquakes are caused by a slip along the thrust fall that forms the contact between two tectonic plates. [*]. Thrust faults are often at the bottom of oceanic trenches, which can displace the sea floor over a large area. As a result, megathrust earthquakes may result in tsunamis that may devastate areas far from the epicenter. [*]. One such mega earthquake occurred in recent memory, in Lumaco, Chile, estimated to have had a magnitude 9.5. There, fatality records vary between 1000 and 6000. And, the monetary cost of the earthquake, adjusted to today, is about 5.5 billion dollars. The resulting tsunamis affected other areas of Chile and several other pacific islands and nations. An undersea mega earthquake, originating in the Suna megathrust in the Indo-Australian Plate, was responsible for the 2004 Indian Ocean tsunami. This tsunami generated waves of an unbelievable 30 meters in height. The death toll was estimated to be a disturbing 227,000 people, in 14 different countries. It was the third most powerful earthquake ever recorded in Asia. In January of 2010, a powerful 7.0 earthquake struck the nation of Haiti near the capital city of Port-au-Prince. Although not classified as a mega earthquake, its destructiveness to life and structures was extreme. Estimated casualties range from 100,000 to over 200,000. The closeness of the epicenter to a densely populated capital city; the poor living conditions of many of the area’s inhabitants; and the dire humanitarian crisis that ensued puts this event in the mega-disaster category. There, massive destruction of residences, 250,000, and commercial buildings, 30,000, contributed to the high number of casualties. Also, poor building practices were a major contributing factor to the destructiveness. [*].

The direct effects of a mega earthquake and or a tsunami are hardly survivable. But, if you were to survive them, or not suffer their direct after effects, living off the grid may help. Utility sources of water may be contaminated or disabled, as treatment facilities may have been damaged. The off gridder may remain ‘connected’ to her or his off grid source of water, thus feeling little change after the event. Makeshift rain collectors may be erected, if rain is available, and stored water may be used for months to years if necessary and available. The off gridder may use stocks of food, and produce a sufficient percentage of her or his nutritional needs locally. If food production systems were destroyed, surviving plants and animals may be relocated, and systems may be quickly rebuilt by the experienced off gridder. Electricity use may be postponed until other more critical systems are brought online, such as food,

water, healthcare, and communications. Communications may be quickly reestablished after surviving a mega earthquake; by replacing, repairing, and or re-deploying associated equipment. Among other knowledge, the off gridder is recommended to learn from past catastrophic events, and may have experience with some past disasters. This knowledge and experience, combined with the willingness to assist, supply, and share resources; may enable off gridder to help herself and others; survive and emerge from a mega earthquake.

Section 09

Beyond Earth

Introduction

Living off the grid is a requirement for exploration. It has been for most of our expeditions, voyages, and missions to past uncharted areas of the world: the arctic, Antarctic, new lands, low earth orbit, and other worlds. Voyages on land vehicles, ships, aircraft and spacecraft; require us to temporarily bring portions of earth unto our vehicles and unto our destination; effectively and temporarily living away (off) from our more permanent natural and artificial environment (grid). We often bring water and food, even to short trips to the park, and trips to the zoo. So, living off the grid is both necessary and natural in many of our familiar instances.

When thinking and planning on voyages to space and other worlds; living off the grid is not an option, it's a necessity. During our explorations, when we get off the ground, our off grid life will be our only life available until we touch-down again. The potential for semi-permanent to permanent habitability, away from earth, is beginning to seem more real as the years pass. With more capable minds and technologies dedicated to the task, it seems we are only decades away from this prospect. Space-based habitats have been seriously considered, even planned, since in the 1970s and 1980s in the US. Some with compelling detail, such as the NASA and Princeton University summer studies in the 1970s. [*]. And, the 'colonization' of space, the moon, and mars are now very popular and supported, even by powerful national space agencies such as the Indian Space Research Organisation, RosCosmos, the CNSA, ESA, and NASA. It is also supported by a growing number of commercial endeavors; Pioneer Astronautics, Bigelow Aerospace, Blue Origin, and Space X. Living off the grid, away from earth, must begin here on the ground. Such unfathomable undertaking, as living away from the planet where we evolved; will take every effort we can muster. Efforts such as the ESA Mars 500; the Mars Society's Flashline Mars Arctic Research Station; and Biosphere 2. These are testament to the serious sacrifices made in the name of future long term and permanent habitation of other worlds. [*][*][*]. Living off the grid on earth begins to normalize and build-upon, to whatever extent it is performed, the requirements to live in non-terrestrial environments. It is a long term "dry run" that can be expanded gradually, and even be passed-on to future generations for further development. In this way, what we now consider grueling trips to mars and beyond, may become little more than enjoyable routine trips to space.

Some off gridders may take their knowledge and experience, of sustainable and efficient living, to unbelievable levels; where all is generated and recycled onboard an "earth ship" home. I believe, nothing less than this is what it will take to travel to the planets and beyond; to remain there for the required periods or perhaps indefinitely. So, a widespread movement of off-grid living is among the best approaches I can think-of to generate, perhaps, millions of "test beds" of ingenuity and creativity. Currently, among the most difficult barriers for a human trip to mars is the fact that the off grid technologies that mimic earth environments are just too large and cumbersome to transport into space. In other words our payload capacity is small, as are our rockets and cargo space. And, the lack of gravity, radiation protection, human psychological factors, and the physical nature of space; are among the many barriers that inflict plans to travel to mars and beyond. So, "getting to work" on these problems may be an effort best taken by large numbers of us, those of us with the drive and experience for living off the grid!

Closer to the stars

Space exploration is the most extreme example that I can think of, for living off the grid. It is complete separation from everything on earth. This is especially true for deep space exploration; when even communication with earth becomes scarce and slow. But, all exploration, including into space, requires taking earth systems and products along with us. This makes it a fact that we may never completely detach from earth, as I believe the best we can do is take pieces of earth along with us; air, water, food, 1 earth gravity, etc. Our explorations, so far, have been relatively short in duration and distance. We have only shyly wandered; about 384,000 km out into space, the earth's average distance to the moon. And, longer duration or permanent habitation of places away from earth would require us to duplicate earth wherever we settle. For example, even if we go to a nearby space station, we must bring water, food, and air; along with many other earthly supplies. So, if we ever settle on the moon or mars, we must bring earth plants, animals and water with us, and hope to start and maintain earth systems there for our trip's duration.

As you read this, space agencies are working on the problems of extra planetary human habitation. And, so it occurs, that these problems include many of the same challenges encountered by people living off the grid; here on earth. Like water harnessing and recycling; food production storage and use; energy production and use; communication; waste management; etc. Of course, for space habitation, these problems have been much more challenging, mainly due to the great distance from earth, and the vastly different environment and challenges of space.

Space habitation includes an array of challenges that include cosmic and solar radiation exposure, integrated vehicle systems, and many human health concerns, such as physical and psychological problems. Although, some of these challenges may be vastly different, between earth and space; living off the grid may contribute-to and solve many of these challenges. This may be done, largely, by off gridders providing "experience data", as well as specific methods and technologies. Experience data simply being the lived experiences and solutions through the challenges of off grid living. And the methods and technologies used to overcome those challenges. All of these may be directly applied or used by extrapolation, or direct application; to space exploration efforts. Here, will briefly discuss possible off-grid contributions, that may provide solutions, or advances, to space exploration challenges: (1) health and psychological problems brought by isolation; (2) water harnessing, use, recycling and wastewater; (3) food production, consumption and waste; (4) off grid renewable energy production, use and maintenance; and (5) telecommunications use and maintenance.

When off the grid, on earth as well as in space, systems for water, food and communications; all need to run on renewable energy, and be part of reliable and efficient systems. And, since access to usable raw materials like coal and petroleum will likely, and thankfully, be out of reach; renewable technologies will be a "must". So, off gridders on earth who use and maintain renewable technologies, have working knowledge with off-grid energy used in space; thus able individuals to contribute in significant ways.

People that live off the grid, experience different levels of isolation. Whether it is physical, social, political, or economic, isolation is an integral part of off-grid living. How well you manage this isolation can determine the quality of your experiences, performance and products. So, when living off the grid, managing isolation is very important for various health reasons. Isolation may not only be personal, but also from resources and services. For example, if you are food self-sufficient, you are isolated from the commercial food grid. Thus, you must have considerable knowledge on food sustainability for your

particular environment. Then, this off-grid food production knowledge can be used, or extrapolated, to space habitation food needs. This is especially the case if you are food self-sufficient in areas that are remote, or where the conditions for food production are challenging.

Also, there are many levels of personal physical isolation you may engage-on while off the grid. You may be “slightly on a different wave” as the rest of your busy and buzzling peers, thus you may be labeled and treated as “weird” or even insane. But keep in mind that though these may be your peers, they may not have a full understanding of the reasons behind your actions. Having said this, in some cases, you may need to become isolated from others to a degree that is necessary. For your safety, peace of mind, or even to avoid harassment; for example. Isolation may not be a difficult task if you reside in a remote location. But successfully coping with the effects of isolation are always good skills to be transferred to space isolation. Again, whatever your level of isolation when living off grid, it has a series of personal and communal challenges and consequences. When managing these, you can generate “experience data”. This data can surely contribute to humanity’s near future space habitation, as we know that physical isolation has health, psychological and social impacts. Especially for social animals like us. In fact, organizations like the Mars Society and space agencies like Roscosmos, ESA and NASA; have researched the problems of isolation. These agencies are spending considerable resources to come up with solutions to combat isolation’s ill effects, so the importance is there. Also, the off-gridder may be engaged, to some degree, in economic and political isolation. For example, if you spend little to no money for your subsistence, this is economic isolation. And, If you participate little to none in the social or political activities of your area, you are socially and politically isolated. Likely, space inhabitants will have to engage in the same types of economic, social and political isolation. These may occur in space, but they are likely to be limited and localized; in space habitation. But, I suspect, they are quite similar to the ones engaged by off-gridders in their homes or small networks. Ultimately, if many off gridders thrive in isolation; their lifestyle and methods can be analyzed and perhaps duplicated in space habitation.

Space habitation requires bringing a precious resource from earth; water. And of course, it requires using it, recycling it, and processing water found in places away from earth. And, water independent off-gridders have the knowledge, the infrastructure, and the methods to harness, process, and recycle water that is not from the utility tap. And, although water use in space has been advanced by space agencies; it is far from solved. Carrying water to space from earth remains a problem for space habitation, due to its weight and bulk. And, sources of water are sparse and difficult to extract. Water is abundant on earth, yet many have problems accessing it. And, usable water is often wasted. For example, water recycling systems are rarely used on earth, so developing simpler and less bulky waste water recycling can help; both on earth and in space. With widespread use of off-grid water systems, as any other technology, there will be many more “test beds” for rapid refinement and development. There may be breakthroughs waiting to happen that we don’t even fathom right now, in many off-grid fields.

Food production is an important part of the off-grid lifestyle. Some living sustainably may take this area of off-gridding to advanced levels. For example, people may grow foods, such as farm animals, for a whole family; entirely indoors. With the use of artificial lighting, comfortable habitats and efficient methods.

Hydroponics and indoor farming are fields currently studied by large space agencies and institutions; but it is surely lacking results in large numbers. And, developments in these fields are sorely needed. Off gridders may "fill-in" this "development gap"; rather quickly. For example, artificially-grown meat is something that is on the horizon. Singapore has approved the use of "cultured" chicken meat, which is grown in the lab. Europe may be on the verge of approving the same. [*]. So, off-grid efforts could contribute to all sorts of food production methods, including creative approaches. Again, larger numbers of "test beds", in hydroponics and off grid farming, may supercharge development and breakthroughs in this field!

Space habitation and off-grid living; both need renewable energy. And, although solar and nuclear energy are currently used to power space systems; there may be other energy sources to consider and develop. Again, off-gridders will surely be constantly in the search for more efficiency in their energy production and use. And, they surely will continue to strive for more power in their alternative energy technologies. It is no wonder many off-gridders have looked at a variety of energy sources, at times including fantastic and illusive ones, often advertised. For example, the so-called "perpetual motion generators" or "black boxes", which have attracted my attention and surely that of many other off-gridders; especially in their initial investigations. I believe it is not beyond possible that someone, somewhere; may tap into a yet-undiscovered source of energy. But, the odds of such groundbreaking, of course, are small. However, these chances would be much larger, if millions of off gridders were, at any given moment, actively searching for these elusive sources. Nicola Tesla and Joseph Newman were among these searchers, and they both had compelling claims of having found such sources, some of which may still need to find "the light of day". [*][*]. Likewise, Off-gridders may contribute with novel efficient systems; to create, use, or conserve energy. For example, many advanced off-gridders may modify, or develop methods in mechanical, electrical, and electronic devices that perform work much more efficiently than anything in the "market". And such methods and devices, or their successors; may be used in space habitation efforts.

Off-gridders may, often, deploy and develop their own telecommunications infrastructure and technologies. They may modify existing radio equipment and even create a market for specialized communications equipment. Radios may operate through short, medium, long, and very long distances, all efficiently and free of charge. There are many types and frequencies to consider and explore; in the radio operation world. For example, HF and VHF radio communications, currently, have amazing performances; although the learning curve for these is steep. And, often these types of communication are difficult to achieve and are erratic. So, the broadening of radio operators, as off-gridders, may cause rapid improvements on these free and reliable telecommunication systems. Perhaps, there could sprout cellular networks with international and even interplanetary capabilities, developed with open-source technologies and digital software that are free of charge. Although, in the telecommunications field, anything short of "groundbreaking" will likely be already "owned"; by the larger telecommunication companies. So, don't be discouraged. Again; many "breakthroughs" may be awaiting, as masses of off-gridders take to the airwaves.

In summary, perhaps the most voluminous contributions from off-gridders, will be their technological experiences and efficient methods. Space habitation will require both. Experienced data and mentalities, centered around hyper-efficiency and reliability, will surely be useful for space exploration. And, as all dealing with exploration; it requires engaging in an off-grid lifestyle; rapid breakthroughs and enhancements in off-grid technologies and methods will be highly useful. In general. Space exploration

will require the development, building, setup, and maintenance of efficient and reliable systems. Off-gridders may become key contributors in these fields, for near-future space exploration or habitation programs. Additionally, off-gridders may even become prime candidates for space habitation itself; largely because of their obviously useful experience, skills, personalities and training. So, people once considered “weird”, may soon become the “heroes” of humanity.

As only off-grid technologies are used in space, by virtue of being away from earth. And, as such; off-grid systems, methods, and mentalities are necessary in space. Currently, off-gridders, although in limited numbers; have contributed for current and prior space missions. As space agencies have traditionally hired independent, “well rounded” and resourceful individuals to go on space forays. People with highly technical, creative and logical mentalities. These describe an off gridder almost perfectly. So, I believe, the off-gridders’ efforts, in developing and refining their technologies and methods, small and large; will surely contribute to the success of future human space habitation, and to the future heroic treks to the stars!

Closer to ourselves

Most of us hold beliefs in the divine, the supernatural, the un-understandable, spiritual, or the profound; for a variety of reasons. Living off the grid may allow us come closer to those beliefs or to ourselves. I believe few things may bring life changing reflection upon us as isolation, scarcity, deep sacrifice, and bold trust in our nature, our team mates, and forces outside our control. I believe, when we depend less on the abundant commodities that surround us, when we miss a meal, or get away from our assurances; something within us is allowed to breath and grow. A peace, a clarity, a spirit is nourished. Being imprisoned, impoverished, isolated, malnourished, and detached; allows that inner nourishment; for reasons I don’t fully understand. Some may call it living on the edge, living within your means, or drawing self boundaries and discipline. Some recognize it as spiritual and divine. I believe, these experiences, although not permanent; bring a new level of depth in most areas of our lives.

Living off the grid may grow to be that in your life which brings you detached satisfaction, fulfillment, and unfettered trust in you, your community, and your that in which you belief. At times I call it, being closer to God, other times I call it closer to myself. Sometimes I just accept I don’t understand it, and “go with the currents”. Other times, I feel en-sync with that universe and forge against much. Ultimately, I believe a balance must be struck, and it seems is best for us to remain in the struggle; to improve-on our forever imperfect nature, our environments, and our behaviors.

Closer to God

Don’t stop reading if you are not religious. This is not meant to be only for the pius. We are all believers in different things. But, religious or not, I believe that living off the grid brings you closer to something much greater than yourself, whatever that may be in your life. To a more self-less, independent, caring, fair, helping, and compassionate version of you. Simply, I believe it brings you closer to a more wholesome version of you; in all the good ways. For example, living off the grid turns away from excess, greed, materialism, selfishness, avarice, hate, unfairness, anger, stress, over-dependance, and more. So,

that in turn you are forced to use more of your positive traits. Simply, turn to the positive while avoiding the negative.

I believe we become better individuals, in my words, closer to God. Believer or not, these righteous actions will help you be happier and secure a better future and legacy, for the world and yourself. I'm not especially religious, and like all, I have had many moments of confusion, doubt, and turmoil in my personal, spiritual, and psychological life. But, I have found that depending on artificial and material excess gets you only superficial glimpses of what is really important; each other, your neighbor. By taking care of your environment, leaving bread on the table for others, and only depending on that which is essential to health; we become more like our ideas of God, we take care of our neighbor. And, I believe the best among us take care of our neighbor first. Believer or not, a righteous God, as your righteous neighbors, will look upon your deeds and not your piety. For the good you do onto others is what will make you better. The excesses you reject are what give you value. The actions you take to help are what will help you in turn. These are the true benefits of living sustainably, living away from society's many traps to bondage, living off the grid!

Section 10

Implications (fallout)

Some may think that living off the grid, if widely-adopted, may take our “modern and advanced society” backward. And, many may also think that living off the grid brings social fragmentation, individual selfishness, and division to our communities. Others may think that living off the grid is living totally isolated and indifferent to others; like the young, the poor, the elderly, the disabled, etc. Furthermore, there may be “predictions” that “it” would bring economic and social instability; the return of the “law of the jungle”; anarchy and disorder. I hope I’ve shown you, in the many previous chapters, that I strongly “beg to differ”. And sadly, most of these just described; are currently being brought about not by the few that live off grid, but by our current monetary system. Yes, the one which I’ve spoken about amply here, and where most of us “live under”. Think about it. Greed, selfishness, rampant poverty, ignorance, and carelessness for others; are all overarching staples of capitalism. Again, here, I hope I’ve thoroughly argued that; living off the grid brings none of the above described, and in most cases, brings about the complete opposite.

An off gridder in a grid tied society, such as now, of course; will be the “out cast”, the “odd one” and the “recluse”. That is true only because she or he is the abject minority, and in some cases “the only person” living this lifestyle in any given area. And, let’s face it, most of us tend to reject minorities, even when they are obviously right, just, or simply better. So, accepting that “outcast”, “odd” or “weird” is not necessarily bad, harmful or wrong; is the only way to move past our bias and “test the waters”. We must accept that those that are “disruptive” are not necessarily wrong. Since disruption is just change; where change is immediately uncomfortable. This change, however inconvenient, we must admit may be advantageous.

I hope, as I have presented in this book, to have clearly shown that change is sorely needed. Our environment is “screaming at the top of the hills” for change. Change in our destructive, polluting, and wasteful habits. The world’s majority, the poor, are begging for change. Change in our greedy and cruel social and economic paradigms. Humanity is crying out for change. Change to stop the rampant and unnecessary death and suffering due to our unsafe roads; inadequate healthcare; growing violence and wars; and our abuses and criminality. Our current fossil-fuel energy system is unsustainable, and we have necessary data pointing to this. This too is “screaming for change”. And, a growing few are becoming dangerously dependent on artificiality and excess, and are hoarding wealth, power, and the ability to destroy natural environments with great efficiency. And, the many are increasingly becoming over-reliant; on systems controlled by these powerful few.

These, and the many other reasons outlined in this book, are why we need disruption, and disrupters; outcast, odd-balls and weirdos; to live off the grid in a grid-tied society. Those people, I believe, are more aware that “there's a need for change”. And they may be the ones to usher a better future. There may be a time where these people won’t need to “hide”, “blend in” or be “conspicuous”. Of course, not while there’s still maliciousness and persecution. So, while working on the necessary change, we must also demand our societies to embrace “all”, even those who live differently; recognizing that change is needed.

Further, I argue that if living off the grid became the norm, and became a widespread lifestyle; it would be hugely-benefit our society and humanity. Not just in how it would save the environment and the

climate, but in how it may help better countless other areas of our society. Further, it would help individuals become more wholesome, powerful and capable. Help most people to save energy and money, better manage their time, resources and finances, and quickly expand into many other useful areas in their lives. And, I believe it would increase the safety, health and happiness of most people.

So, let's do a brief "thought experiment". Let's imagine that living off the grid quickly spreads "like wildfire" across a small town. Let's imagine that in your region, suddenly, living off the grid is the norm. Before off-gridders "disconnected", in this thought experiment, from their old wasteful and corrupt utilities and other services; they had secured reliable replacements for those goods and services. So, there was a period of learning, preparation and trials; prior to going off the grid. So, there's little chance for chaos in the transition to going "off grid"; as many may think. And, long before the transition people, would be empowered with useful and practical knowledge on how to safely, efficiently, and independently; harness and manage resources. Resources like water, food, telecommunications, energy, and finances. For this, education and training in water management, farming, communications, energy and economics; would be necessary. These few areas alone would require years of rigorous training and practice, let alone the rest of the education required by a person. As you may tell, I believe in the power of education; so it would be thorough, effective, and free of charge for all. Education is a large topic, perhaps to be treated elsewhere in more detail. But, I also believe that today's education systems are largely ineffective and wasteful. So, by the time a person is an independent adult, in off grid town, she or he is more than prepared to harness, produce and use resources; responsibly and effectively.

So, in this imaginary off grid society, there would be vast differences in the way we live and interact with each other. For those that think and behave "differently"; there would be no need to hide or remain indoors. If an area needs improvement, and someone has an idea to improve it; they'd be "encouraged" to "speak up". There would be no need to "mask" your resource saving efforts, for example, to avoid harassment and shame. Those efforts would be encouraged. And, with a more educated public, logical and reasonable thinking would dominate public discourse. With reduced ignorance; compassion, tolerance and forward thinking would increase significantly, thus improving the quality of life for most.

There's going to be important differences in the neighborhoods across this off grid town. First, no costly and dangerous electric power cables and infrastructure; strewn above our streets, roads, and in-between cities. So, safety would increase, and waste and costly inefficiency would decrease, for energy production and maintenance. Those power plants, substations, towers, and cables would be replaced by local solar energy production, on each building's rooftop. As power companies disappear, there would be significantly less utility bills to worry about. No tears for that! With no electric utility bill; people's "kept income" would be much higher. Eventually, there'd be no bills for water service, electric service, internet service, or telecommunication services. Hurray! So, people's financial standing would improve, as would their quality of life; as the stress and worry about finances would be "things of the past".

Due to all the improvements in energy production and use, there would be very little, if any, air, water and noise pollution. So, breathe easy! And, since fuel would quickly become "a thing of the past", transportation would change significantly. Air transportation would be largely replaced by train travel, cars would finally become less needed, due to better designed cities. And, all transport would be non-polluting and quieter. Perhaps mass transit would be the norm, or smart and connected self-driving electric vehicles; all on tracks. These mentioned measures alone; would improve pedestrian and driver safety on the roads; significantly. This would finally put a stop to all the death and carnage of our current

roads! These benefits would also allow many animals and plants to return to the cities, and thrive alongside people. Also, water sources would be cleaner, shared and maintained, all free of charge. As most services would be free or funded by reasonable taxes (public service). I envision “necessities” to be free, because people would know we all depend on these. And, it would be considered criminal, as it should, for people to use other’s “needs” as an opportunity to enrich themselves. Also, It would be criminal to deny water, food, and shelter; to people that cannot and don’t want to pay for them! So, in off grid town, there would be no need to “feed the greed of a few for the benefit of some and for the detriment of the many”. I believe that the economic system would be so impacted by this new paradigm, that greed and selfishness would be highly discouraged. So, money may lose most of its appeal in such a society.

Furthermore, I think there would be very little hoarding of resources. For example, water, food, land, and material property. If a neighbor, in off grid town, lacks a water filtering system, and she is unable to obtain one; perhaps, someone capable in those systems may somehow become aware of the need. And, they may quickly donate and install one for her. Similarly, food sources would be shared and maintained “free of charge” or as a “public service”. Many in off grid town may choose to grow their own foods locally, while others will go get food from available “public local sources”; as needed. Make no mistake, this is not food rationing, this is smart and efficient food resource management for the benefit of all. This is not a central food distribution bank. Recall, that in off-grid town, people were empowered to produce food sharing their products with those that chose to specialize in other fields. And, in off grid town, residents have accepted that quality basic necessities should not be offered; only to those with money. Or, that quality products and services should not be reserved for those with “more money”. There, it would be practiced that even the poorest among them are capable of great things, and deserve access to quality resources and services; water, food, energy, healthcare, housing, transportation, communication, learning, etc. In such a town, I envision poverty to be a rare and temporary affair.

In off grid town, most every home may have at least one expert; in one or more areas of water management, food production, energy production, and telecommunications. This is due to the education provided that empowers individuals, which in part teaches to avoid becoming overly dependent on any system, and teaches highly technical specialties. And, there would be the freedom and encouragement to be self-sufficient and efficient; independent while connected to others, as best as possible. See, living off the grid is necessary today, mainly because the grid-tied world has turned corrupt, abusive, wasteful, violent, unhealthy and polluting. But, once those “grid problems” are mostly solved, in off grid town, then being off the grid is not necessary. Because the grid is now mostly clean, healthy, efficient, non-abusive, etcetera. Get it?

Respect for life and health; would be paramount to all else, in an off-grid town. So the well-being of all, would be a protected right with the fullest force of the law. In turn, violence and conflict would not be allowed nor tolerated, from anyone; official or civilian. Violence would be completely outlawed. And, no effort would be spared to correct anyone’s reliance on violence. In this way, war and conflict would become illegal; and by extension any tools used in war. In this future, violence would be only perpetrated by criminals.

Importantly, most everyone would privately own their means to produce and use water, food, energy, and communications. All free of charge, contracts or commitments. But, there may also be networks of people that share those resources free of charge. So, in off grid town, there would be no abusively-

costly utility water; no greed-ridden food industry; no corrupted and monopolistic electric companies; and no manipulating and snooping telecommunications industry. Furthermore, basic things such as housing, healthcare and transportation would be absolutely free of charge. Financial charges for people's "needs"; would all be things of the past. And, the funds and jobs from the obsolete industries would shift to many other expanding industries: healthcare, education, exploration, technology, etc. And, employees and resources would be shifted to other needs; in government, institutions, and commerce.

Also, since there would be a marked decrease in the bills that most people pay. Perhaps most households won't have financial "responsibilities". So, there would be less "need" to work for money. Instead, I believe, work would be driven by other rewards. And, personal energies and resources would be dedicated for the people, activities, and things that workers deem important. In this way, bondage to employers; human labor trafficking; wage slavery; and labor exploitation; would all be mostly eradicated.

Let me stop here and remind you that I'm not trying to dream up a utopian, or perfect society. These are just very conservative visions of what I believe to be "likely outcomes" of the widespread acceptance of living a certain way. Living with "people, efficiency, sustainability, reason and evidence" as the major driving forces for decision making.

Again, many in off-grid town will choose to interconnect, so as to make it simpler and more efficient to harness and use water, food and energy, and use telecommunications. For example, there may be safe interconnections among many homes that produce energy from solar, and create "a grid" of electric energy that is free of charge. This method allows the entire network to be little-affected by problems with individual points of production. This same interconnection principle may apply for other services and goods. There, interconnection would not be the replication of what we now have. There would be "decentralized networks". For example, for utility energy, we now have a grid of interconnected recipients for energy, that originates at large "central" locations. Interconnection, in off grid town, means connecting producers and sharing production among a much smaller network, where production is not controlled by single individuals or companies. Here, there is balance of power, which is important to prevent abuse.

I believe off grid town would still use the monetary system, or something similar to it. However, it may evolve into electronic-only form, and mostly used for large scale commerce and industry. Since, perhaps, most people's basic needs will be met money-free, like many of the "paid" basic services of today: healthcare, housing, education, etcetera. Again, services necessary for life and health, would be provided without the exchange of funds. In contrast, today, we barbarically consider those basic services as "privileges" only to be gotten by those with plenty of money. I believe, in that future, we would "evolve-out" of such "backward mentalities".

So, I strongly believe that the advantages are there to living off the grid now. And, that the future is bright if you uphold and practice this lifestyle. Importantly, the off grid future does not require fragmentation and division; isolation and reclusivety, nor does it require danger or illegal activity. Living sustainably and smartly is by definition advantageous, safe, and liberating.

In that future, I believe, "living normally" would replace the words "living off the grid". But for now, living off the "currently harmful grid" is necessary, and is a way for us to become free and able to

unleash our productive, sharing, and helpful potential. And, it would allow us to advance more sustainably and securely into the ever-changing future, on earth and elsewhere!

Thank you for reading.